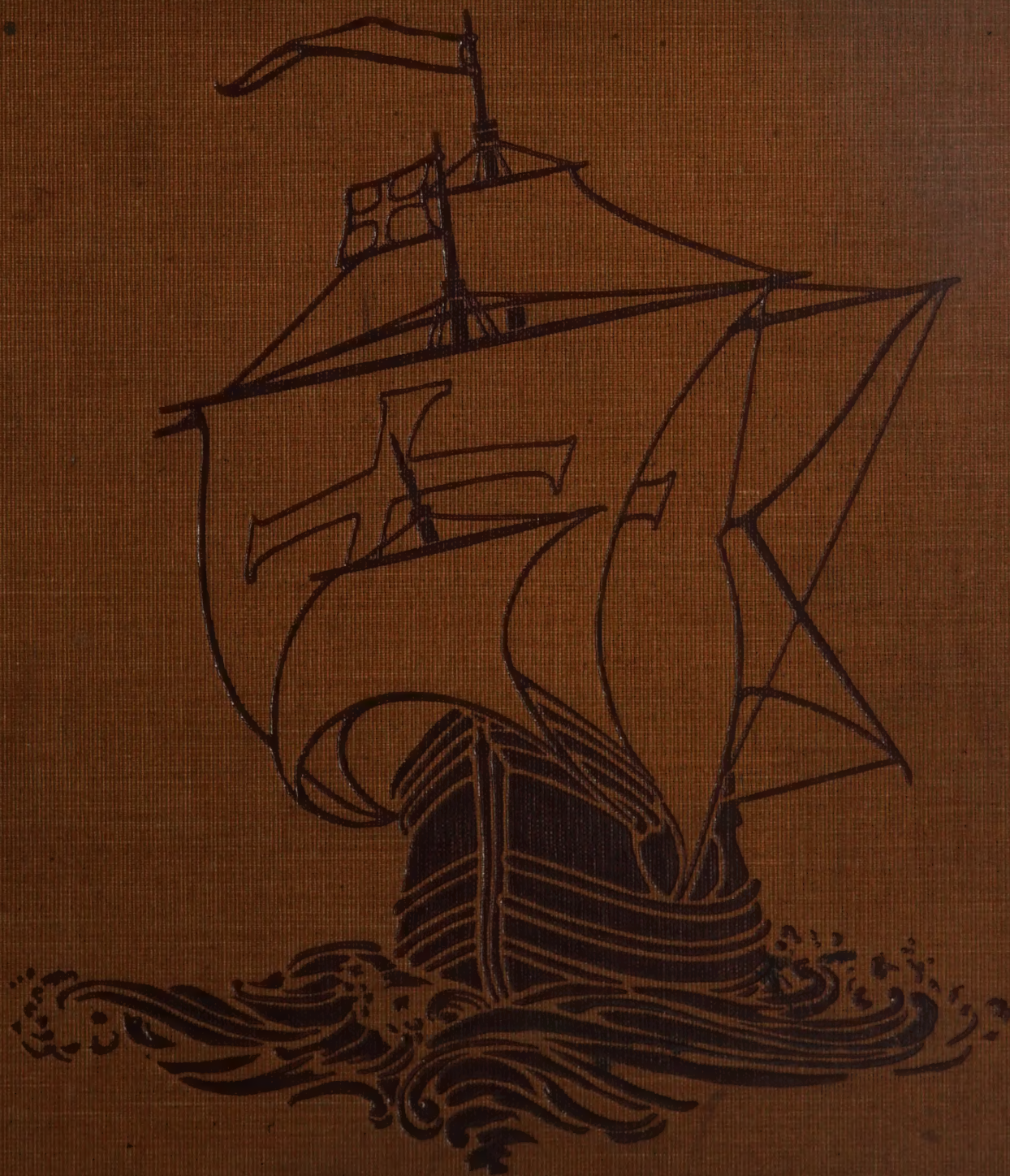


EDITION FOR MISSOURI AND IOWA

NATURAL SCHOOL GEOGRAPHY

REDWAY AND HINMAN



AMERICAN BOOK COMPANY

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THE NATURAL GEOGRAPHIES

NATURAL SCHOOL GEOGRAPHY

BY

JACQUES W. REDWAY

AND

RUSSELL HINMAN

Author of the "Eclectic Physical Geography"



NEW YORK :: CINCINNATI :: CHICAGO
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NATURAL SCHOOL GEOG.

W. P. 32

PREFACE

THE Natural School Geography is intended to follow a first or introductory text-book in the subject, and is adapted for the use of pupils of from twelve to fourteen years of age. It is designed to complete the course of geography in the elementary schools.

The central thought in the book is Man, and the Earth is studied as his dwelling place. Throughout the treatment emphasis is placed upon industrial, commercial, and political geography.

But man's activities are all influenced, and often very largely controlled, by his physical surroundings — climate, surface, soil, etc. The marked industrial differences between New England and our Gulf States are due in great measure to differences in physical features; and the same is true in varying degree of any two regions on the earth's surface.

It is thus manifest that an intelligent study of the activities of man in their causal relations must be based upon some knowledge of physical geography. For this reason, the first thirty-five pages of this book are devoted to the development, in simple, untechnical language, of the basal principles of physical and general geography. These principles are of world-wide application, and constant reference is made to them in subsequent pages. To facilitate such references, the paragraphs in this part of the book are numbered. These lessons should be carefully read and discussed by pupils and teachers, in class, before assignment for study, and before the study of the grand divisions is begun. Formal recitations on the introductory lessons may be deferred, however, at the discretion of the teacher, until the book is finished and reviewed.

The Topics for Oral and Written Work and the exercises in Correlations and Comparisons which have been inserted at convenient intervals in this book not

only serve as reviews, but are so framed that they stimulate thought and lead the pupil to view what he has learned from a somewhat different standpoint. They form a nucleus for the "laboratory work" now recognized as an essential feature in the study of geography.

In recognition of the fact that well-selected geographical reading used in connection with the regular text-book greatly enriches the geography course, specific references to appropriate, entertaining, and easily accessible collateral material have been inserted at the ends of sections throughout the book, under the heading Supplemental Work. This should be used to the extent which time and circumstances permit.

Corresponding maps throughout the book are drawn on the same scale, and therefore prevent the pupil from forming the usual misconceptions regarding the comparative size of countries. A single scale serves for the colored maps of all the grand divisions; a single but larger scale, for the maps of the United States and Europe; and a single but still larger scale, for the sectional maps — with the exception of that of New England, which is drawn on three times the scale of the others. On the physical maps, the relief features are shown by contour lines in the manner now used on the best topographical maps issued by the government.

The pictures have been generally reproduced directly from photographs, and have been selected and arranged solely for the purpose of *illustrating* the accompanying text. The photograph of the Great Barrier reef reproduced on page 18 was kindly loaned by the American Museum of Natural History, New York city.

Acknowledgments are due to Dr. C. T. McFarlane, Principal of the State Normal and Training School at Brockport, New York, for valuable suggestions and assistance in revising and perfecting the manuscript.

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NATURAL SCHOOL GEOGRAPHY



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INTRODUCTORY

WE have already learned much about the geography of the neighborhood in which we live—its surface, its climate, its products, and the occupations of the people; we have also learned something about the countries of other parts of the world and the peoples who live in them. To know about these is a very important part of the study of geography, but it is only a part.

As we have already learned, some parts of the earth are cold, while other parts are hot; some places are very rainy, but in others rain is practically unknown; some regions are level, others are rugged and mountainous. Some lands are densely inhabited, but in others few people live. In some places, too, the people are engaged in farming; in others the only pursuit may be mining or perhaps commerce. One country may produce wheat as its chief crop; another, coffee; still another, cotton.

Now these differences, and hundreds of others which might be noted, do not occur by chance, but are the result of definite causes. These causes are generally very complex and difficult to trace, but some of them usually have to do with the climate, or the surface fea-

tures, or the movements of the earth—that is, with geography. In this book we shall learn how the geography of the various countries has helped to determine their useful products, and the occupations of the people.

We may possibly regard the country in which we live as one that is separate and distinct from all other countries. In a certain sense this is true. But the various countries are scarcely more separate and distinct than are the hands, wheels, and springs of a clock.

We may certainly learn something by studying the parts of a clock separately, but we can get a real knowledge of the use of the parts only when we see them properly together, in running order, so that each part is doing such work as its shape, position, and character fit it for.

So, too, the various countries, although they differ in form, surface, climate, and position, are all parts of the planet Earth. Each is affected by the movements of the earth, and they are all warmed, watered, and made habitable by means of the earth's atmosphere and its circulation. Therefore, in order to study the geography of the various countries with understanding, we must first learn something of the earth as a whole—its movements, surface features, climate, and conditions of life.

FORM AND SIZE OF THE EARTH

1. When we look over a wide level country, or over the ocean, the earth appears to be flat, but for several reasons we know that its surface is curved. (1) When a ship sails away from us, we can see the sails and the tops of the masts long after the lower part of the ship is



out of sight. (2) People have traveled in one general direction entirely around the earth to the place from which they started. (3) When the earth passes between the sun and the moon, the earth's shadow, which falls on the moon and darkens, or *eclipses*, it, is seen to be always round. As

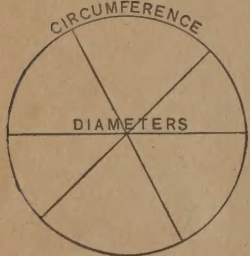
a sphere is the only body whose shadow is always round, we know that the earth is spherical.

But the earth is not a perfect sphere. It is slightly flattened on two opposite sides, so that its shape is somewhat like that of an orange.

2. The *diameter* of the earth, or the distance through its center from side to side, is about 8000 miles; its *circumference*, or the greatest distance around it, is about $3\frac{1}{4}$ times its diameter.



3. We are likely to wonder why the people and loose objects do not slide off the earth or drop away from the other side of it. If you raise a stone from the ground on any side of the earth and then let go of it, it falls to the ground again. The earth has the power of pulling objects toward itself, and the pull is so strong that it keeps loose bodies close to the earth's surface. This wonderful power is called *gravity*.

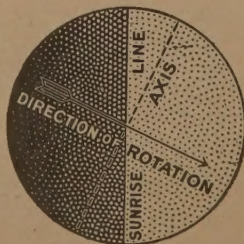


Tests. How do we know that the shape of the earth is spherical? How long is the earth's diameter? How many miles in the earth's circumference? A fast steamship sails about 500 miles a day; how long would it take to sail the greatest distance around the earth? What is meant by gravity? Of what use is it?

ROTATION OF THE EARTH

4. The earth is always spinning, or *rotating*, slowly upon its shortest diameter, or *axis*. The rotation of the earth causes the succession of *day and night*, and aids us in determining *time, direction, and location*.

5. **Day and Night.** The earth gets most of its light and heat from the sun. Only the side of the earth toward the sun is lighted; the other side is in darkness. As the earth rotates, any place on the surface is thus bathed in daylight while that part of the earth is turned toward the

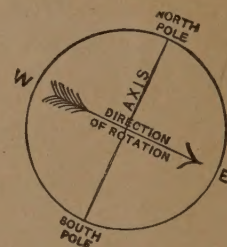


sun, but is in the darkness of night when it is turned away from the sun.

Sunrise or sunset at any place occurs when that place is carried by rotation across the line which divides the light from the dark side of the earth.

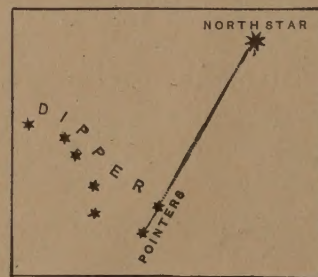
6. **Time.** The time required by the earth to make one complete rotation is a *day*. For convenience we divide a day into twenty-four equal parts, called *hours*, which are subdivided into *minutes* and *seconds*. Clocks are machines which indicate the speed of the earth's rotation in such a way that we can easily determine the passage of these subdivisions of a day.

7. **Direction.** The direction in which the earth rotates is called *east*. As the earth turns eastward, the sun appears to move across the sky in the opposite direction, which is called *west*. *North* is the direction on the earth's surface from any place to the end of the earth's axis called the *north pole*, while *south* is the direction to the other end of the axis, called the *south pole*. If you stand facing east, your left side is toward the north pole, and your right side toward the south pole. *Northeast* is the direction between north and east; *southeast*, the direction between south and east; etc.



8. The earth rotates so slowly that it is hard to tell at once which way it is moving, but there are easy ways to find directions.

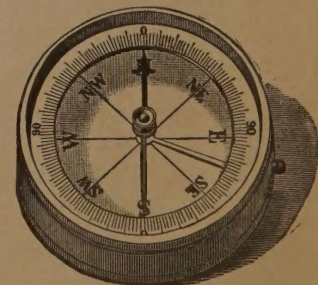
(1) About the 21st of March and the 21st of September the sun rises exactly in the east, and sets exactly in the west. During our summer months the sun rises a little north of east; and during our winter months, a little south of east.



(2) In our part of the world the sun at noon casts the shadow of any upright object toward the north.

(3) In our country the North Star may be found any clear night by the aid of two stars (the "Pointers") in the star group called "the Dipper." The direction along the earth's surface toward the North Star is north.

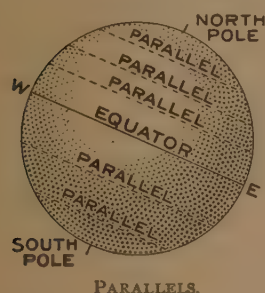
(4) The directions may be found very closely at any time by means of the *compass*. This is a little bar of magnetized steel, called the magnetic needle, balanced on a pivot so that it can swing freely. When the needle comes to rest, it always points to a place near the north pole.



COMPASS.

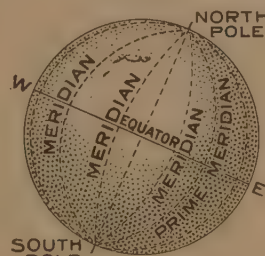
9. Location. A sphere is equally curved in all directions, and has neither corner nor edge from which to begin measuring or locating points on its surface; therefore it would be hard to describe the location of places on the spherical earth, were it not for the earth's rotation. Rotation fixes the position of the earth's axis, and the ends of the axis, or poles, are points from which we may locate any other place on the surface. We imagine a line drawn around the earth halfway between the poles. This line is called the *equator*, because it divides the earth's surface into equal parts—a northern and a southern half, or *hemisphere*.

10. To locate a place in a north and south direction, we indicate its distance north or south of the equator. This distance is called *latitude*. Places north of the equator are in north latitude; those south of the equator, in south latitude. All places on the same side of the equator and at the same distance from it are in the same latitude. A line connecting such places is parallel with the equator, and so such a line is called a *parallel of latitude*. Any number of such parallels may be drawn. They all extend exactly east and west.



PARALLELS.

11. At all places on the same north and south line noon occurs at the same instant. A north and south line extending from the north pole to the south pole may therefore be called a mid-day line, or *meridian*. We may imagine a meridian to pass through any place on the earth. The meridian which passes through Greenwich, a part of London, is taken as the *prime meridian*.



MERIDIANS.

A place is located in an east and west direction by indicating the distance of its meridian east or west of the prime meridian. This distance is called the *longitude* of the place.

12. Thus we can describe the exact location of any place on the earth's surface by stating its latitude and longitude; that is, its distance north or south of the equator, and its distance east or west of the prime meridian.

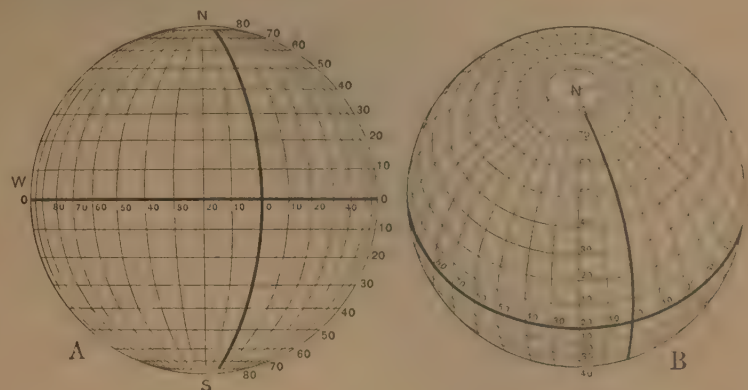
13. Measurement of Latitude and Longitude. Latitude and longitude are measured in *degrees*.

The degrees of latitude are numbered from the equator north or south. There are ninety degrees (90°) from the equator to either pole.

Thus a place 10° north of the equator is said to be in latitude 10° north; a place 20° south of the equator is said to be in latitude 20° south; etc. The north pole is in latitude 90° north, and the south pole, in latitude 90° south. (See diagram at the top of next column.)

Put your pencil on the parallel of 10° south latitude; of 30° north latitude. Show where the parallel of 45° north latitude should be drawn.

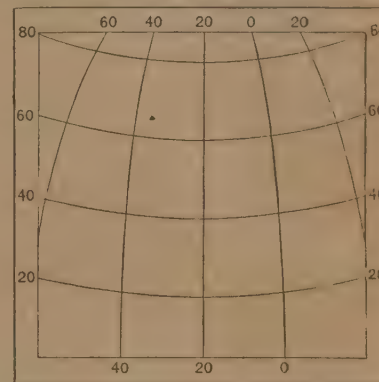
The degrees of longitude are numbered from the prime meridian east and west halfway round the earth to the meridian of 180° .



A place 40° east of the prime meridian is said to be in 40° east longitude, and a place 70° west of the prime meridian, in 70° west longitude. The meridian of 180° east longitude is the same as the meridian of 180° west longitude.

Put your pencil on the meridian of 60° west longitude. Locate a point in 35° north latitude and 65° west longitude.

14. Several parallels are usually drawn on maps, sometimes as straight lines, but generally as curved lines, as shown in this diagram, and the distance of each in degrees from the equator is marked on the side margins of the map. Several meridians are also usually drawn on maps, and the distance of each in degrees east or west of the prime meridian is marked on the top and bottom margins of the map.



It should be borne in mind that east or west on a map is always along the parallels, no matter how curved they may be; and that north or south is always along the meridians.

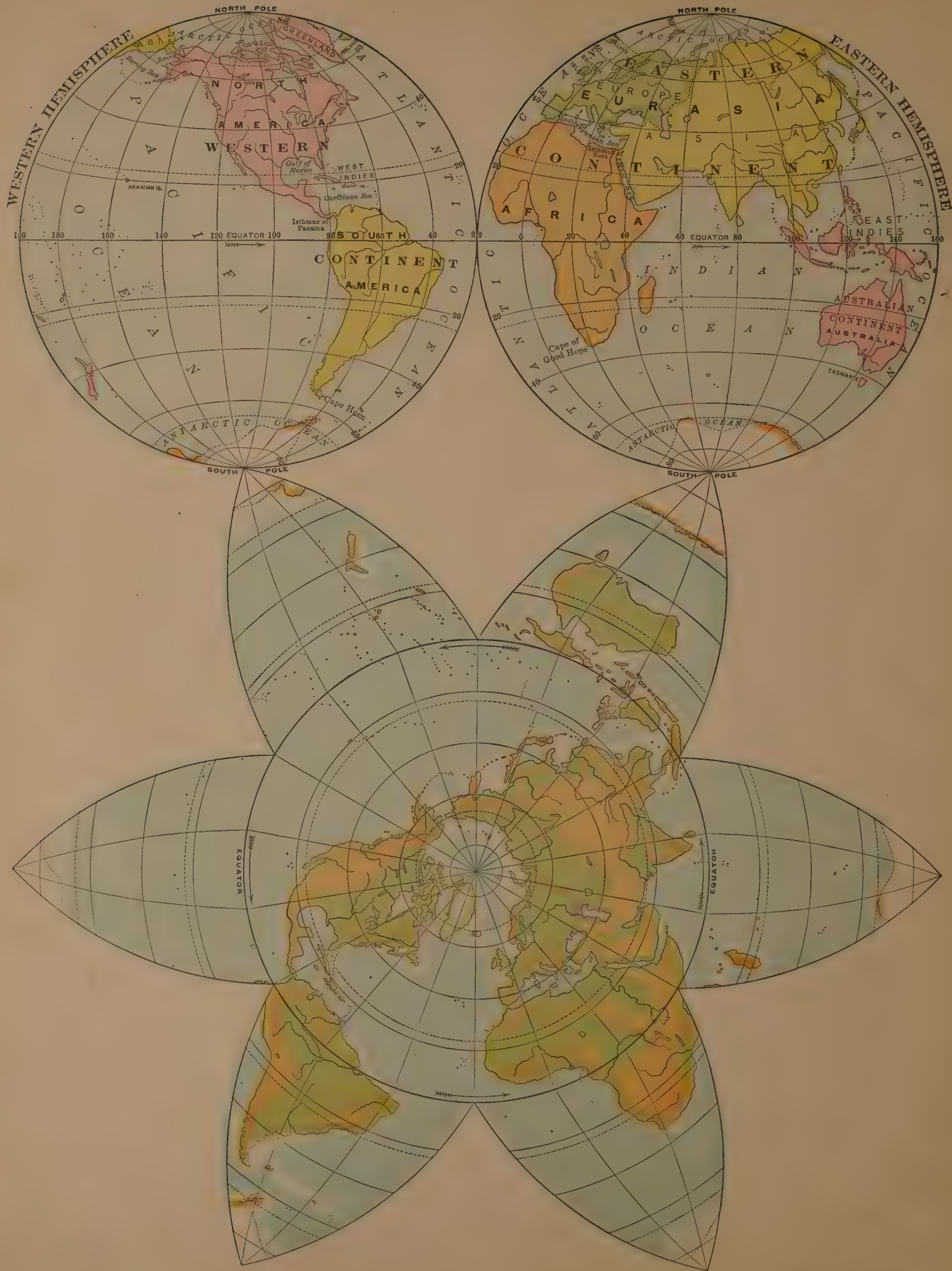
Tests. Define axis; poles; rotation. Explain day and night. Define a day; its divisions. How is a clock related to rotation? Name and define the chief directions. Give four ways of finding them. What is the equator? How does its location depend upon rotation? What is a hemisphere? What are parallels? meridians? What is latitude? longitude? How are they measured?

Supplemental Work. Illustrate the succession of day and night by means of a ball and a candle. If your house fronts south, are the sunny rooms at the front or at the back? Why? On a clay ball draw the equator, parallels, and meridians.

Through how many degrees of longitude does rotation carry a place in an hour? When it is noon on any meridian, what time is it on the meridian fifteen degrees to the east? thirty degrees to the west? one degree to the east? When it is noon on any meridian, in which direction, and how many degrees distant, is the meridian on which it is 6 A.M.? 3 P.M.? 3 A.M.? 12.20 P.M.?

TOPICS FOR ORAL OR WRITTEN REVIEW ON THE EARTH

- I. FORM. Apparent; real.
- II. SIZE. Definition and length of diameter; of circumference.
- III. GRAVITY. Facts about it; use.
- IV. ROTATION. Four things depending on it; explanation of each.



THE SURFACE OF THE EARTH

15. The surface of the earth is not perfectly smooth and evenly curved. Some parts bulge out slightly, forming *regions of elevation*, while other parts are slightly sunken, forming *regions of depression*. The regions of depression are covered with salt water which forms the *sea*, while the parts of the earth's surface which protrude above the surface of the sea form the *land*. About one fourth of the earth's surface is land.

16. Most of the land in the world lies in three great continuous masses, or *continents*; the remainder consists of many smaller masses, or *islands*. The Western Continent is on the side of the world called the *western hemisphere*; the Eastern Continent and the Australian Continent are on the opposite side of the world, or the *eastern hemisphere*.

17. In the hemisphere maps at the top of the opposite page, the blue color represents the sea and the other colors represent the land. Name the two *grand divisions* of the Western Continent. By what narrow neck of land, or *isthmus*, are they connected? What group of islands lies between these grand divisions? What large island is north-east of North America? What island near Greenland is partly in the eastern and partly in the western hemisphere?

What isthmus is at the place where the Eastern Continent is nearly separated into two parts? What grand division is southwest of the Isthmus of Suez? The remainder of the continent is the grand division Eurasia; but Europe, the western part of Eurasia, is usually considered as a grand division, and Asia, the eastern part, as another grand division. What islands are near the coast of Europe? A small part of Asia extends into the western hemisphere; by what narrow passage of water, or *strait*, is it separated from the Western Continent? What island group, or *archipelago*, lies between Asia and Australia?

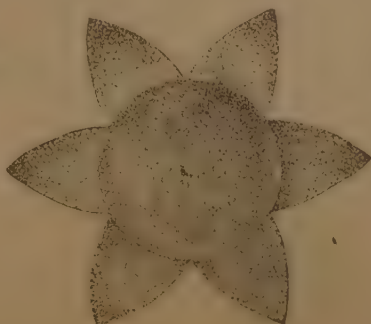
In which grand division do we live? Examine the table on p. 153, and make a list of the grand divisions in the order of their size.

What is the name of the part of the sea surrounding the south polar region? From this broad expanse of sea great *oceans* extend northward between the continents. What ocean extends northward between America and Africa? between Africa and Australia? between Australia and America? Which of these oceans is largest? Which is narrowest? Name the branch of the Atlantic Ocean which surrounds the north pole. From the table on p. 153 make a list of the oceans in the order of their size.

Supplemental Work. Make a sketch from the map, showing an island, an isthmus, a strait, and an archipelago. Model these forms.

THE CONTINENTAL PLATEAU

18. **The Star-shaped Map.** If we peel one half of an orange in gores, and then turn back the skin, as in the pictures below, we bring the skin of the whole orange into view. On the same principle a single map showing the surface of the whole round earth may be drawn as at the bottom of the opposite page.



The north pole is represented at the center of the map; hence *north* on this map is toward the center from all sides, and the direction of the earth's rotation, or *east*, is shown by the arrow points. The northern hemisphere is included in the largest continuous circle, which marks the equator, and the surface of the southern hemisphere is represented as divided into gores and turned up from below to form the six points.

Find the Arctic Ocean on the star map. What two grand divisions of land nearly surround the Arctic Ocean? With what ocean has the Arctic a broad connection? With what ocean is it connected by Bering Strait? What is a strait? Find the islands Greenland, Iceland, and the British Isles. Find South America; the West Indies; Africa; Australia; the East Indies; the Indian Ocean.

19. **Regions of Depression and of Elevation.** In the part of the sea which is represented by the darker blue, the water is very deep, the average depth being about two and one half miles. This is the true region of depression on the earth's surface.

The lighter blue represents places where the sea is much shallower, the water being less than one mile deep. If the surface of the sea were to sink one mile lower than its present level, this light blue region would become land, and all the continents would be united into a single great land mass, although the parts of the sea colored dark blue would still have an average depth of one and one half miles. Thus not only the land surface but also the bottom of the shallower part of the sea (the light blue) may be considered as forming a single great region of elevation.

20. **Continental Plateau.** Any broad region of elevation may be called a *plateau*; and as this great region of elevation contains all the continents, it is called the *continental plateau*. The submerged part of the continental plateau, which borders the continents, is called the *continental shelf*. On the continental shelf are located all the large and many of the small islands of the world; hence these islands are called *continental islands*. The continental plateau covers a considerable portion of the northern hemisphere, and at three places extends into the southern hemisphere. It includes almost all the land in the world, except many very small islands in mid-ocean, which are called *oceanic islands*.

21. **Continents and Grand Divisions.** Near the north pole and among the East Indies, the waters of the sea extend entirely across the continental plateau, forming great *continental seas*. These seas divide the continental plateau into the three great land masses, or continents.

The Caribbean, Mediterranean, and Red seas carry the water of the sea *nearly* across the continental plateau; they lie between and thus mark off the natural grand divisions of the Western and Eastern continents—North and South America, Eurasia and Africa.

TOPICS ON THE DISTRIBUTION OF LAND AND WATER

I. CONTINENTAL PLATEAU. Position. Continents. Continental seas.

II. ISLANDS. Continental. Oceanic.

III. THE SEA. Position. Depth. Oceanic.

HIGHLANDS AND LOWLANDS

22. The surface of the land rises from the sea very gradually in some places, and very abruptly in others, but the highest regions are always found some distance back from the coast. In the high regions of the earth a few places reach elevations of about five miles above the sea, but the average elevation of the land is less than half a mile. All the land below this average elevation is spoken of as *low-land*, and is indicated by green on the physical maps in this book. All the higher parts of the land are called *highland*, and are colored brown or buff on the physical maps.

Which side of the Western Continent is mostly lowland? (See maps, p. 8.) Which side is mostly highland? Toward which ocean is the highland side of the Western Continent? Toward which oceans are most of the highlands of the Eastern Continent?

23. **The Great Highlands.** As shown on the star map, the great highlands of the continents form an almost continuous horseshoe-shaped curve from Cape Horn to Cape of Good Hope.

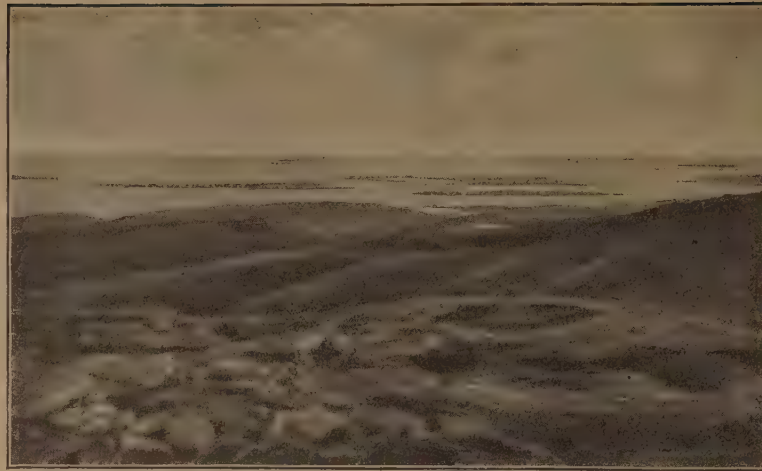
24. **The Broad Lowlands.** On the outside of the highland curve the slope is generally short and steep to the Pacific and Indian oceans. On the inside of the horseshoe, however, the slope is long and gentle to the Atlantic and Arctic oceans. This slope includes most of the broad lowlands of the continents, together with several small areas of highland. In Australia the highlands are near the Pacific, and from them broad lowlands extend to the Indian Ocean.

In following the highland horseshoe curve around from Cape Horn to the Cape of Good Hope, note and name the only three places where you would be obliged to descend from the highland. It will be seen that the only breaks in the highland curve are at the places where you leave one grand division to enter another.

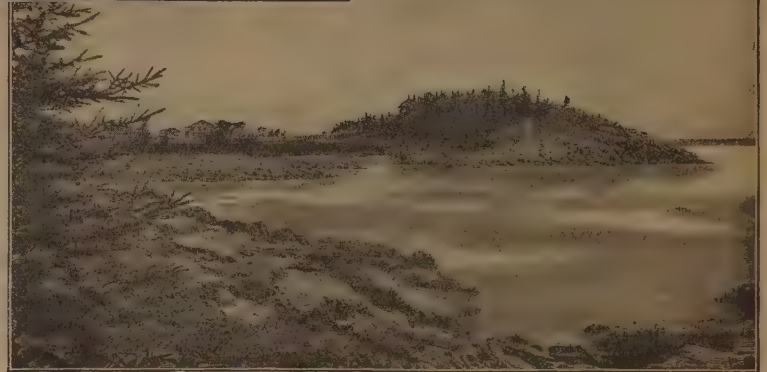
The Australian branch of the continental plateau is especially low; most of the northern part is covered by the sea, the remaining small areas forming the islands of the East Indies.

Tests. Define lowlands; highlands. Where are the great highlands of the continental plateau? the smaller areas of highland? Describe the two chief slopes of this plateau.

Supplemental Work. Model a plateau with a short, abrupt slope on one side, and a long, gentle slope on the other.



ISLANDS OFF THE COAST OF MAINE.



A PROMONTORY ON THE COAST OF MAINE.

covered it, forming continental seas; and parts of the plateau now covered by water were once so high as to connect land masses that are now separate. Thus North America may have been connected with Eurasia in the Arctic regions, and southeastern Asia may have been connected with Australia.

26. It is well known that such upward and downward movements of the land are *still taking place in most parts of the world*, though each movement may be so slight that it can not be seen. The jar of such a slight movement, however, may cause, over a wide district, an *earthquake*, which may be so violent as to shake down houses. Even though each movement can not be seen, hundreds of slight movements may, after many centuries, elevate the sea bottom into a mountain range.

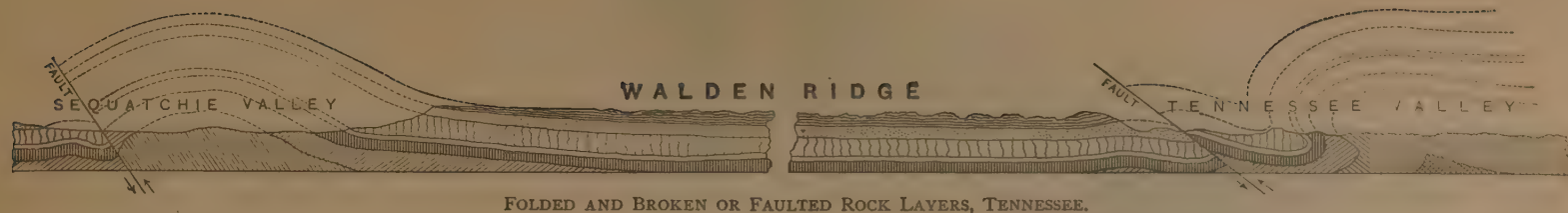


A FIORD IN NORWAY.

UPHEAVAL OF THE LAND

25. **Changing Levels of the Land.** It is believed that in past ages the surface of the continental plateau has been at times higher and at other times lower than it now is. Much of the present land was once so low that the water

27. **Upheaval of the Land.** It is thought that *every* part of the land was covered by the sea at some time in the past and became land by being gradually upheaved above the sea. Earthquakes, though common in all parts of the world, are now most frequent near the Pacific coast and in the great highlands. Upheaval is therefore thought to be most active nowadays in those regions.



28. Sinking Coasts. The surface of the land is seldom exactly smooth or level. It almost always consists of higher places, or *hills*, with lower places, or *valleys*, between them.

Therefore, when a coast region is slowly sinking beneath the sea, the valleys are first submerged. Up these the water may extend far into the land. Such arms of the sea form *gulfs* or *bays* if they are wide, and *fiords* or *estuaries* if they are long and narrow.

The higher parts of the coast, left projecting into the sea between the indentations, are called *peninsulas*, and the ends of these form high capes, or *promontories*. Some peninsulas are connected with the mainland by only a narrow neck of land, or *isthmus*; and when by continued sinking the water covers the isthmus, the highest part of the former peninsula is left as an *island*.

Thus a sinking coast is usually irregular, with many bays and peninsulas, and is quite often fringed with islands.

29. Rising Coasts. The sea bottom, even near the coast, is much smoother and more nearly level than the surface of the land. It has very few short and steep slopes such as are seen on the ordinary hills and valleys of the land.

Therefore, when the smooth sea bottom along the rising margin of a continent is brought above the surface of the sea, it usually makes a comparatively even and regular coast line.

The coasts of the Arctic Ocean and of the North Atlantic are very irregular, and long stretches of these coasts are known to be slowly sinking. The Pacific coast of America is generally quite regular, and seems to be rising.

Tests. How are earthquakes often caused? Explain the effect of sinking on a coast; the effect of rising.

Supplemental Work. Find out something about the San Francisco earthquake of 1906. Make a sketch from the map (p. 8), showing a gulf or bay, a peninsula, and a cape. Model in a pan, with clay or putty, an island having a regular coast line but an irregular surface. Show, by pouring water into the pan, how the sinking of the island would make the coast quite irregular.

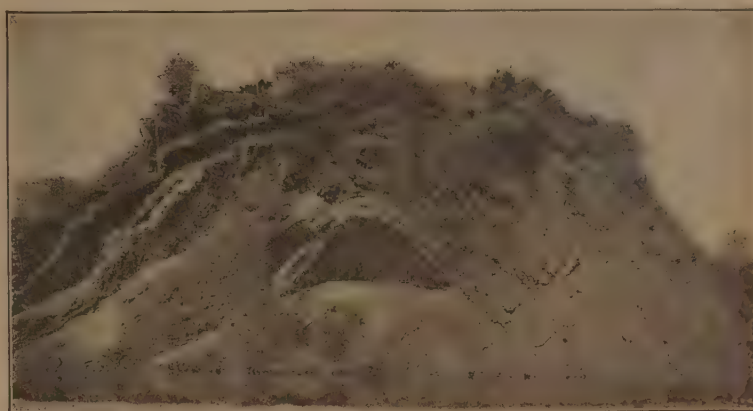


NEARLY LEVEL ROCK LAYERS,
AUSABLE, N.Y.

MOUNTAINS

30. Level Rock Layers. In many places the layers of bed rock which are found beneath the soil have been but little disturbed in the upheaval of the land, and are still nearly level as they were when beneath the sea. *This is often the case in lowland regions.*

31. Rock Folds. In other places the layers of bed rock have been upheaved into waves or folds. A single rock fold of this kind is shown in the picture. Often there



FOLDED ROCK LAYERS, MARYLAND.

are several folds side by side. The rock layers in the folds are often cracked and broken across, and the layers on one side of a crack, or *fault*, have slid up higher than the same layers on the other side, as shown at the top of the page. In the gradual formation of these faults, probably hundreds of earthquakes have occurred.

32. Mountains. Such disturbance of the rock layers is nearly always found in mountain regions, for *most mountains are the harder layers of these rock folds left projecting high above the surrounding country*,—the softer layers having been gradually worn off and washed away by the rain and the streams.

If the top of the fold has been worn away, the projecting layers of harder rocks in its two sides may form nearly parallel ranges of mountains, as in this diagram.



ILLUSTRATING PARALLEL RIDGES FORMED BY WORN ROCK FOLDS.

As there are often several folds side by side, mountains usually occur in roughly parallel ranges. A great region



A LITTLE VOLCANO IN CALIFORNIA, SHOWING AN OLD OUTFLOW OF LAVA WHICH BY DAMMING A VALLEY CAUSED THE FORMATION OF TWO LAKES.

of folded rocks may produce a series of ranges, forming a *mountain chain* or *system* several thousand miles long.

33. Volcanoes. At many places in the world, steam and white-hot melted rock, or *lava*, occasionally force their way out of the earth through cracks, or vents. Such vents are called *volcanoes*.

The lava which issues from the volcano cools and generally accumulates around the vent, forming a *volcanic mountain*, or *cone*. So the opening, or *crater*, of a volcano is usually near the top of a mountain peak.

Sometimes the lava issues quietly and flows in great streams over the surrounding country, where it cools into sheets of hard lava rock. Generally, however, there are terrific underground explosions of the steam, which hurl the melted lava high into the air, where it cools and falls over a wide region, as a rain of rock fragments.

These explosions are generally so violent that they jar the whole region about the volcano, and hence explosive eruptions are frequently accompanied by earthquakes.

After perhaps centuries of occasional activity, the eruptions of a volcano may cease entirely. The volcano is then said to be *extinct*.

Volcanoes are supposed to be one of the results of the upheaval or the sinking of the earth's surface. Lava is found in nearly every mountain region where the rocks are greatly disturbed, and most of the *active* volcanoes occur near the Pacific margin of the continental plateau. Volcanoes also occur far from the continental plateau on the sea bottom, where they build up huge cones, whose tops mark the location of oceanic islands.

Tests. What is a mountain? a range? a system? Define a volcano; its features.

Supplemental Work. Read in Baldwin's Readers, 5th year, about the destruction of Pompeii. Read chapter 43 in "Carpenter's Geographical Reader, Europe"; chapter 20 in "Carpenter's Geographical Reader, Australia."

TOPICS ON EFFECTS OF UP- HEAVAL

I. CONTINENTAL PLATEAU. Continents. Grand divisions. Continental islands.

II. SURFACE MOVEMENTS. Results: on surface; on coast. Indications: earthquakes; volcanoes.

III. SURFACE FORMS. Great highlands: location; shape; divisions. Slopes: short; long. Broad lowlands: location; extent.

WEARING AWAY OF THE LAND BY WEATHERING

34. Wearing away of the Land. We have learned that the gradual rising and sinking of the earth's surface have resulted in the upheaval of parts of the sea bottom to form land. But the surface of the land is constantly being worn away, and made lower, by the action of the weather and of water and ice. This wearing away of the land is called *erosion*.

Erosion goes on very slowly, bit by bit, but it goes on all the time. In the course of many years it hollows out deep valleys in the land, and wears away mountains which are composed of the hardest rock.

35. Rock Waste and Soil. When the surface of rock is warmed or cooled, as the weather changes, it expands or contracts slightly. This may break off larger or smaller pieces. Water freezing and expanding in rock crevices breaks off other pieces. Sand blown by the wind against rocks wears them slowly away. Rain water slowly dissolves the natural cement that binds together the harder particles of some rocks, and the rock then crumbles.

By such breaking up, or *weathering*, of the solid rock most of the land is kept covered with a layer of rock fragments, or *rock waste*. Near the surface this is usually quite fine and, when mixed with decaying animal or vegetable matter, forms the *soil*. At a slight depth the fragments are larger, while deeper still is the solid bed rock.



SAND DUNES, COLUMBIA VALLEY, OREGON.

36. Movement of Rock Waste down the Slopes. The soil, sand, and rock fragments near the surface are gradually moved down the slopes of the land by the splash of rain drops, the expansion of water freezing in the soil, the movement of worms, the growth of roots, and the plowing of the soil by man. When this

movement uncovers the larger fragments of rock waste beneath, they too are weathered into smaller particles which, in turn, travel down the slope.

Thus the soil and rock waste are constantly moving down the slopes of the land,—more rapidly on steep than on gentle slopes. Therefore the soil is usually thicker on gentle slopes and on lowlands, than on steep slopes and on highlands.

37. Movement of Rock Waste by the Wind. Clouds of dust in the air are simply particles of rock waste being carried along by the wind. In dry regions where there is little vegetation, and on the sandy shores of lakes and the ocean, much fine rock waste or sand is thus transported by the wind, and often piled into ridges, called *sand dunes*.

Testá. Define erosion; rock waste; soil; dunes. How is rock waste formed? How are soil particles disturbed?

Supplemental Work. Observe at a road cutting, or newly dug cellar, the layers of soil, rock waste, and bed rock.

Read chapter 6 in "Carpenter's Geographical Reader, South America."

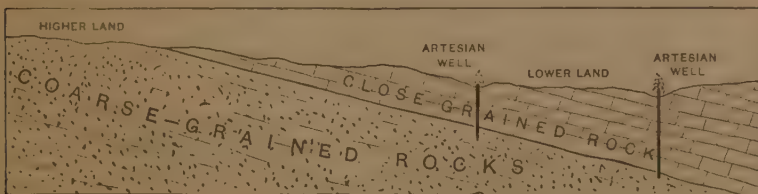
WEARING AWAY OF THE LAND BY GROUND WATER

38. Ground Water. Much of the rain that falls on the land sinks into the ground, passing through the rock waste and penetrating the bed rock beneath, often to a great depth. Even if the soil is dry at the surface, there is usually ground water at a slight depth. It is ground water that supplies all springs and wells.

39. Springs and Wells. The ground water makes its way very slowly through the earth from the higher to the lower lands, where it may flow out at the surface, forming a *spring*. Spring water is thus rain (or snow) which, in the form of ground water, has made a slow journey, often of many miles.

Some springs and wells dry up in a time of drought; and all of them would eventually dry up if the ground water from which they draw their supply were not frequently replenished by rain.

In some regions where the bed rock is too close-grained to allow the ground water to pass through it easily, water is obtained by driving a pipe well through the close-grained rock into some layer of coarse-grained rock beneath, which gets a supply of ground water from a higher region. The water rises in such *artesian wells* and sometimes overflows at the surface, forming an artificial spring. (See diagram.)



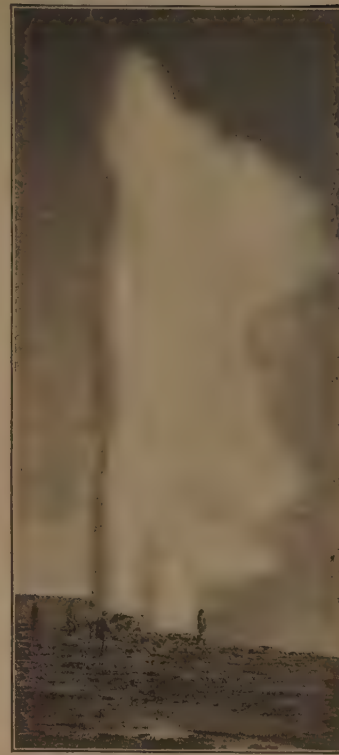
ILLUSTRATING ARTESIAN WELLS.

40. In some places *hot springs* occur. These draw their supply from ground water that is in contact with heated rock, often at a great depth. The water feeding some springs is so hot that as it nears the surface part of it, at short intervals, suddenly turns into steam and

throws the rest high into the air. Such spouting hot springs are called *geysers*.

41. In passing through the small pores and crevices of the rocks, ground water is thoroughly filtered, and consequently the water of springs and wells is usually very clear. Though clear, it may contain much mineral matter, such as salt, sulphur, lime, or iron, which it has dissolved from the rocks through which it has passed. Such mineral spring water is frequently used for medicinal purposes.

42. Work of Ground Water. Some kinds of minerals, especially limestones, are easily dissolved by water. In regions where the bed rock is limestone the ground water



OLD FAITHFUL GEYSER, WYOMING.

often dissolves and carries away so much of it as to leave great underground cavities and galleries, perhaps many miles in extent. Most *caves* and *caverns*, nearly all of which occur in limestone regions, are caused in this way.

In time the roof falls in, and the cavern becomes an open valley. In some cases a section of the roof may remain standing for a time after the rest has fallen, thus forming a *natural bridge* across the valley.

43. Hot water, which dissolves all kinds of rock more readily than cold, usually brings to the surface a great deal of dissolved mineral matter. When hot water containing much mineral matter cools, part of this matter is deposited in solid form. Such mineral deposits are often found about hot springs. Sometimes they are highly colored and the deposits take various beautiful forms, such as basins and terraces, as shown in the picture.



HOT SPRING DEPOSITS, YELLOWSTONE PARK, WYOMING.

Tests. Define and explain the formation of a spring; an artesian well; a geyser; a mineral spring; a cave; a natural bridge.

Supplemental Work. Find out about the geysers of Yellowstone Park, and about Mammoth Cave or Luray Cavern.

STREAMS AND LAKES

44. Streams and Stream Systems. Nearly every spring is the beginning, or *source*, of a stream of water which flows from it. The source of a stream, however, may be a marsh, a mass of melting snow and ice, or simply the water from a passing shower.



THE MISSISSIPPI RIVER SYSTEM.

Streams are usually quite small near their sources. They seek the lowest places in which to flow, usually the bottom of a valley. As they advance, several from either side of the valley unite, thus forming larger streams. The water from thousands of such side streams,

called *branches* or *tributaries*, gradually swells the main stream until it may become a mighty river, which at length may flow into the sea.

A stream with all its branches, and all the smaller tributaries of each branch, is called a *stream system*.

45. Basins and Divides. All the region from which water in time of rain might flow into a stream is called the *drainage basin*, or *basin*, of that stream. Hence the basin of any stream includes the basins of all its branches.

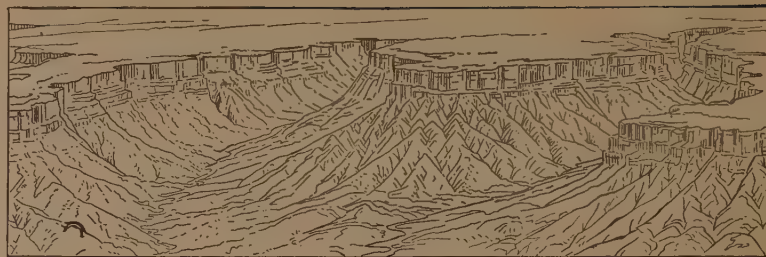
Any region from which the slope is downward in two opposite directions, is called a water parting, or *divide*, since it divides the water which flows down one side from that which flows down the other. The top of every range of hills and mountains is a divide, but so too is the crest of every low swell of land—from both the water flows away in opposite directions.

Adjacent stream basins are separated by divides.



46. Lakes. An obstruction or dam across a stream valley causes the stream to spread out, forming a *pond* or *lake*. The *inlets*, or streams flowing into a lake, must raise its surface until the water can escape over the obstruction before an *outlet* stream is formed, flowing from the lake.

47. Salt Lakes. From every moist surface, water is generally passing into the air as invisible vapor. By this process, called *evaporation*, considerable water is taken from the surface of streams and lakes, especially when the air is dry (§ 88; p. 22). In very dry regions



ILLUSTRATING THE EROSION OF VALLEYS.

lakes usually have no outlets, because evaporation prevents the water from rising high enough to flow over the obstruction.

When a lake loses water by evaporation only, the dissolved mineral matter brought in by the inlets gradually accumulates until the lake water becomes very salt and bitter.

Rivers which flow into a very dry region may lose so much water by evaporation that they grow smaller as they advance, and finally may disappear entirely, leaving a coating of salt on the dry bed.

Tests. Define stream; source; branch; river; system; basin; divide; lake; inlet; outlet. Explain the formation of salt lakes.

Supplemental Work. After a rain, find in a road or street a little system of streams; sketch it; and model its basin.

WEARING AWAY OF THE LAND BY STREAMS

48. The Formation of Valleys. Notice the water flowing in a roadside ditch or street gutter, after a shower. It is very muddy. If a boy stands barefoot in such a ditch or gutter, he can feel little hard particles swept against his feet by the rush of the water. If a tumbler filled with muddy water is set aside for a few hours, the water becomes much clearer, while the particles of soil and sand which made it appear muddy settle to the bottom of the glass as a deposit of fine rock waste.

49. Much rock waste from the surface of the land near by is swept into every stream and carried along by its current; the amount so taken being greater in wet than in dry weather. As a result, the valleys of streams are slowly growing *wider*, and the intervening hills and uplands are slowly growing narrower and lower.

As the particles of rock waste are being carried along by the current, they strike against the bottom of the stream, loosen and detach other particles from it, and thus slowly wear the bottom away. The result is that the valley is slowly made *deeper*.

Although these processes are slow, they are constant and have been going on for a very long time. It is in this way that every valley in the world has been made, either wholly or in part, by the stream which flows along its bottom.

50. Narrow and Wide Valleys. A swift stream can wear away its bottom faster than a stream with a gentle current, because it can carry larger pieces of rock waste, and hit harder blows on its bottom.

In the uplands, near the sources of streams, because the slopes are steep and the streams swift, valley deepening is apt to go on more rapidly than valley widening, and the valleys are generally narrow, with steep side slopes. Very deep and narrow valleys are called *canyons*.

When streams reach the lower lands, they are larger and hence may carry along more rock waste; but the current is slower, the particles are smaller, and the cutting power is less. Here valley widening is apt to go on more rapidly than valley deepening, and the valleys generally are wide, with gentle side slopes. The word "valley" is often used to include the whole stream basin (§ 45).



GRAND CANYON OF THE COLORADO RIVER.



A WIDE AND COMPARATIVELY SHALLOW VALLEY, NEW YORK.

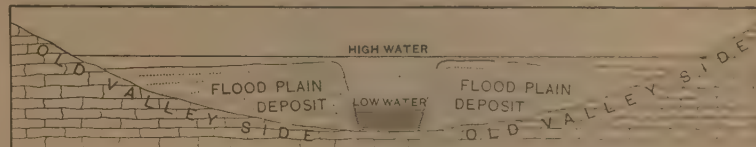
51. By the gradual deepening and widening of valleys, the intervening uplands may in time be carried away entirely, and a wide region, once hilly or mountainous, may be thus reduced to a nearly flat lowland.

52. **Flood Plains.** The rapid melting of snow or a great fall of rain in a stream basin causes the stream to rise, and perhaps to overflow its banks, producing a flood. At such times the stream carries much rock waste and the water is very muddy.

Near the middle of the stream the water is deep and the current is swift, but on the overflowed banks it is shallow, and the current is so slow that much of the rock

waste sinks to the bottom. This deposit appears as a layer of *alluvium*, or *sediment*, along either bank, when the stream subsides to its ordinary width.

The next flood leaves another layer of sediment on top of the first, and the next flood still another layer.

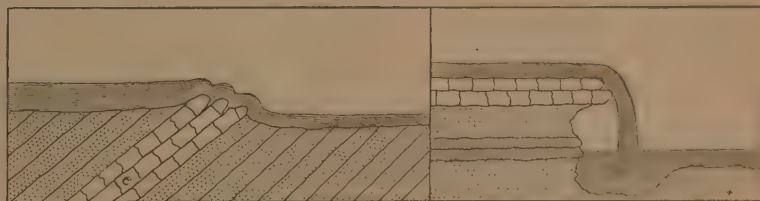


ILLUSTRATING FORMATION OF FLOOD PLAINS.

Thus there is gradually built up by many floods a strip of "bottom land," or *flood plain*, on one or both sides of nearly every stream. Flood plains are usually larger near the mouth than near the source of a stream.

53. The flood plain, though nearly level, is often a little higher near the stream than along its outer edge, where sluggish streams, called *bayous*, are often found.

54. As the flood plain is composed of very fine particles of rock waste, it is usually very fertile, but it is subject to overflow, and is very easily undermined and washed away by the main stream in time of low water. For this reason a large stream in a wide flood plain is usually very crooked. Its course is a series of great bends, called *meanders* or *oxbow loops*, and is constantly changing as the current wears away one bank or the other.



ILLUSTRATING RAPIDS AND CASCADES.

ILLUSTRATING CATARACTS.

55. **Other Stream Features.** When a stream in cutting down its bed encounters a very hard layer of rock, the deepening of the valley above its edge is retarded, while the deepening of the valley below continues. Thus the stream makes a sharp descent at the edge of the hard layer, forming *rapids* or *cascades*, or perhaps a *cataract*.



A SMALL CATARACT, ALABAMA.

56. Whenever the current of a stream carrying much rock waste is checked, part of the rock waste sinks to the bottom and forms a *bar*. Sand bars are thus formed at many places on the bed of a stream, but they are often washed away again when a flood increases the current and volume of the water.

57. When a stream carrying rock waste enters the sea or some other body of water in which there is little.



MUIR GLACIER, ALASKA.

or no current, the rock waste sinks to the bottom, and the deposit is apt to accumulate until it reaches the surface of the water. There it gradually forms a fan-shaped tract of low, swampy land, called a *delta*, which divides the stream at its mouth into several channels. By the continued deposit of sediment at the mouth of each channel the delta is gradually enlarged and is often made very irregular in shape.

Tests. How are valleys deepened? widened? How are canyons made? Define and explain the formation of flood plains; bayous; oxbow loops; rapids; cascades and cataracts; sand bars; deltas.

Supplemental Work. Draw a section of a highland valley; of a lowland valley. Draw a diagram and explain why a ledge of hard rock across a stream retards the deepening of the valley above.

Read pp. 149-151, 165-169, and chapter 17 in "Carpenter's Geographical Reader, North America."

WEARING AWAY OF THE LAND BY GLACIERS

58. **Glaciers.** In the cold polar regions, and even in warm countries near the high summits of mountains (§ 81), more snow falls than is melted. It thus accumulates from year to year until it becomes so deep and heavy that the lower part is pressed into solid ice, and is forced to move slowly forward down the slope of the land. Such a thick sheet of slowly moving ice is a *glacier*.

In parts of the polar regions a continuous or *continental glacier*, hundreds of feet thick, covers the entire land surface and moves slowly downward into the sea, where great fragments break off and float away as *icebergs*. In warmer latitudes *valley glaciers* only are found. These occupy mountain valleys, and usually melt away before reaching the lowlands or the sea.

59. **Work of Glaciers.** The rock waste — sand, pebbles, and even large masses of rock — under a glacier becomes embedded in the ice and is dragged forward by the glacier, scratching, polishing, and wearing away the bed rock beneath. Rock waste also rolls down on the surface of valley glaciers from the mountain sides. Much of this finds its way to the bottom through the numerous deep cracks which are opened in the ice by the slow movement of the glacier. Thus glaciers rapidly wear away the rock surface over which they move, and carry forward an enormous quantity of rock waste.

If the glacier descends into the sea, the rock waste which it carries is borne away by icebergs. If the glacier does not reach the sea, the rock waste is deposited along its melting end, as an irregular sheet of sand, gravel, boulders, and clay, called *glacial drift*, or as an irregular range of hills, called a *terminal moraine*.

60. **The Glacial Period.** In northern Europe and in North America as far south as the Ohio and Missouri rivers, the surface of the land is covered with glacial drift and the remains of terminal moraines. There are many rounded boulders of a different kind of stone from any of the bed rock in the neighborhood, and many peculiar whaleback-shaped hills or *drumlins*, composed of glacial rock waste. The bed rock of these re-



ICEBERG NEAR COAST OF ALASKA.



BOWLERS DEPOSITED BY AN OLD VALLEY GLACIER IN CALIFORNIA.

gions, where it can be examined, is covered with glacial scratches, and there are more lakes in these regions than in any other parts of the world. Some of these lakes occupy basins in the bed rock, but most of them occupy depressions in the irregular surface of the glacial drift, or old valleys across which a deposit of glacial drift forms a dam.

These peculiarities indicate that long ago there was a *glacial period* of time, during which the northern hemisphere was colder than it is now.

Great continental glaciers covered northern North America and northern Europe. The American glacier moved out in all directions from the Laurentian Plateau (p. 36), and is therefore called the *Laurentian glacier*. The European glacier is called the *Scandinavian glacier*, because it moved out in all directions from the Scandinavian peninsula (p. 108). These glaciers must have lasted thousands of years, but when the climate became warmer they melted away and left the glacial deposits spread over the countries which the ice had covered.

Tests. Where and how are glaciers formed? What work is done by them? What is an iceberg? Define glacial drift; terminal moraine.

WEARING AWAY OF THE LAND BY WAVES AND TIDES

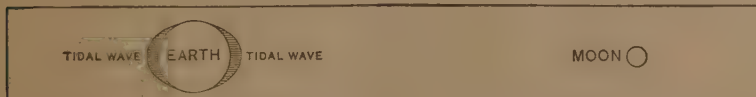
61. Waves. The surface of any sheet of water is thrown into waves by the wind. Light breezes cause mere ripples, but storm winds may heave the surface of deep water into billows as high as a three-story house.

Waves raised by a storm in one part of the sea spread rapidly to a great distance, but even big waves do not affect the water to any great depth.

When a wave enters shallow water, its lower part drags on the bottom, while the upper part, rushing onward, falls forward, forming a *breaker*. Big waves drag on the bottom in deeper water than little waves, and hence may break farther from the land.

62. Tides. At many places on the seacoast the water gradually rises for several hours and becomes many feet deeper; then for several hours it gradually falls to about its former level; then it again slowly rises, and so on. This slow and regular rise and fall of the sea is called the *tide*. The rise is *flood tide*, and the fall, *ebb tide*.

63. The tides are caused chiefly by the action of the moon, which, like the earth, possesses gravity, or the



power to pull loose objects toward itself. The moon's gravity causes the surface of the sea to rise in two low but broad tidal swells, or waves, one on each side of the earth.

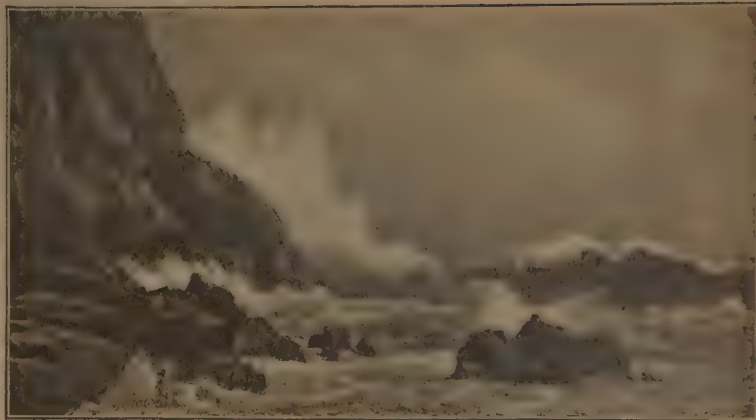
As the earth rotates, these waves travel over the surface of the sea. When the crest of one of these waves reaches the coast, it is high tide at that place; when the



trough between the waves reaches the coast, it is low tide. About twelve and a half hours intervene between one high tide and the next.

64. Unlike wind waves, the tidal waves cause powerful currents which extend to the very bottom of the sea.

In the open sea the tidal wave is low and imperceptible, but as it advances between the headlands of a coast, the approaching shores and the shallowing water force the wave to become much higher. At the heads of some narrowing bays it is as much as 50 or 60 feet



HIGH AND ROCKY COAST, MAINE.

high; on more open coasts heights of from 6 to 12 feet are usual.

High tide rushes rapidly up some estuaries and river mouths in the form of a breaker called a *bore*, which is dangerous to shipping.

65. Work of Waves and Tides. Waves dash upon the coast at times with great force. If the shore is high and rocky, fragments of loosened rock are picked up and hurled against the cliffs, thus loosening other fragments, and undermining and rapidly cutting back the front of the cliffs. The fragments, pounded against the cliffs, or rolled backward and forward upon one another, are worn away, first to pebbles and then to fine sand.

Much of the sand made in this way on rocky headlands is carried by tidal currents and by the wash of the waves into sheltered coves, or to straight stretches of low and gently sloping coast, where it is thrown upon the shore to form a smooth, sandy *beach*.

Thus the waves and tidal currents are constantly wearing back the rocky headlands, and building out the intervening coves—thus making the coast line more regular.

66. In some places great storm waves breaking at some distance from the shore, and depositing sand in the water, gradually build up a long, low island, or *barrier beach*, parallel with the shore. Between this beach and the mainland a *lagoon* of shallow water is inclosed. In other places, where opposing currents leave still water between them, sediment from both

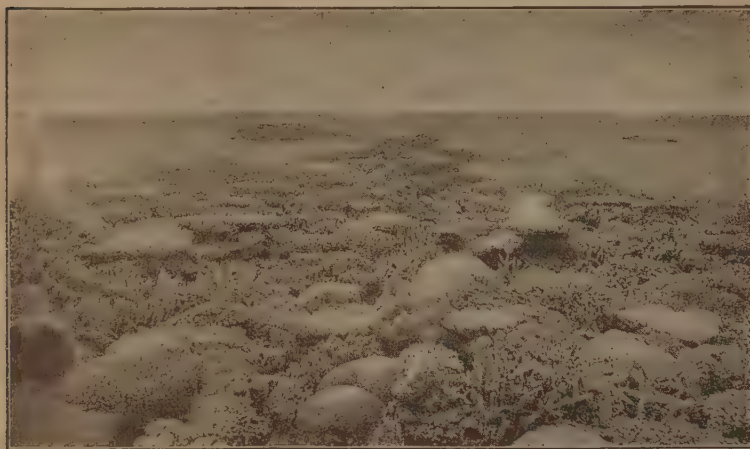


SMOOTH AND SANDY BEACH, MAINE.

currents is deposited, forming low, sandy *caples*, *spits*, or *sandy hooks* extending out from the shore.

67. Coral Reefs and Islands. Where the sea water is warm, clear, and not too deep, and where currents bring plenty of food, little animals called *coral polyps* live in great colonies attached to the sea bottom. When the animals die, their stony skeletons, composed of lime extracted from the water, remain, and to these skeletons other polyps of the same kind become attached. Thus by the growth and death of countless polyps the rocky base on which they grew may gradually be built up to the surface of the sea, forming a low island, or *coral reef*. A coral island often has the form of a ring of land, surrounding a shallow lagoon; it is then called an *atoll*.

Tests. Define and explain waves; breakers; tides; flood tide; high tide; ebb tide; low tide; a bore; a barrier beach; a sandy hook; a coral reef.



GREAT BARRIER CORAL REEF, AUSTRALIA.

THE ROCKY LAYERS OF THE LAND

68. What becomes of the Rock Waste. We have now learned that the weather and moving water and ice are constantly at work wearing away the land and carrying the rock waste down the slopes.

In time, much of this rock waste reaches the sea, where it is deposited as sediment. The heavier material (gravel and sand) sinks soonest and forms a layer of coarse sediment near the shore, while the finer particles are carried farther out before they too sink and form a layer of mud or clay.

Nearly all the rock waste brought down to the sea is deposited within a few hundred miles of the coast, and with it are mixed the bones of animals washed from the land, or of sea animals. Farther from land almost all the deposits are the shells of sea animals. Of these there are millions; and although most of them are very tiny, they make, in some regions, a thick layer of slime, or *ooze*, on the deep sea floor.

69. Continued additions make the deposits thicker each year, until the lower layers are pressed into

stone. In these layers of sediment the forms of the shells and bones are frequently preserved as *fossils*. The sandy deposits near the shore become layers of sandstone; the deposits of mud and clay become layers of shale or soapstone; and the oozes become different kinds of limestone and chalk, which are often little more than masses of fossils.

70. By gradual upheaval these layers of hardened sediments on the sea bottom become land, and by the pressure and heat produced in the upheaval they may be hardened, crystallized, and changed still further—limestone becoming marble; sandstone, quartzite; and shale, slate. Some of the more deeply buried layers may even be melted and changed to granite or to lava. In this way have been formed nearly all the rocky layers of the land.

71. Peat and Coal. In some places simple forms of plants grow thickly on the surface of fresh water near the shores of shallow ponds and lakes. They may in time cover the entire surface of the water with a floating mat of vegetation, and this, growing on top but dying beneath, may eventually fill the lake with a dark mudlike mass called *muck* or *peat*, the whole forming a peat swamp, or *bog*. When thoroughly dried, peat may be used for fuel.

Thousands of years ago great swamps, somewhat like the present peat bogs, but containing a vastly more luxuriant vegetation, existed in many lowlands. After their formation they were depressed below the sea and were covered by layers of mud and sand. The sediment gradually hardened to layers of rock, and the peat to beds of the black stonelike substance which



FOSSILIFEROUS LIMESTONE.

we call *coal*. In the later upheaval of these beds some of them were further changed into *hard* or *anthracite* coal.

72. Petroleum and Natural Gas. Vegetable or animal matter which ages ago was deeply buried under sediments, has sometimes been gradually changed, not into coal, but into *rock oil*, or *petroleum*, and into *natural gas*. Both of these substances, like coal, make good fuel. They are obtained by boring deep wells through the overlying layers of rock.

Tests. How does the ocean deposit near the shore differ from the deep sea deposit? Explain the formation of sandstone; shale; limestone. Of peat; coal. Of petroleum; natural gas.

Supplemental Work. Bring to school specimens of several kinds of rock and of several kinds of coal. Label each specimen, and keep the collection in the schoolroom.

Read pp. 229-233 in "Carpenter's Geographical Reader, North America."

TOPICS ON WEARING AWAY OF THE LAND

I. EROSION. Definition. Work of wind. Ground water: source; uses; erosive work. Streams: source; deepening work; broadening work. Glaciers: source; motion; erosive work. Work of waves.

II. TRANSPORTATION. Wind. Water. Ice. Direction.

III. DEPOSITS. Dunes. Stream deposits: sand bars; flood plains; deltas. Spring deposits. Glacial drift. Shore deposits: beaches; sandy hooks; coral reefs. The layers of rocks of mineral origin; of animal or vegetable origin.

IV. FEATURES OF SURFACE WATERS. Springs: origin; classes; uses. Streams: source; divides; flood plains; falls (cataracts); meanders; bayous; mouths. Lakes: origin; inlets; outlets; classes. Glaciers: regions; classes.

REVOLUTION OF THE EARTH

73. Revolution. The earth, in addition to the rotation on its axis once every twenty-four hours, has another motion, called *revolution*, which carries it around the sun in a nearly circular path, or *orbit*. The time required by the earth to revolve completely around the sun is called a *year*.

74. Inclination of the Axis. As the earth revolves, the axis always points in nearly the same direction (toward the North Star, p. 6). The axis is not perpendicular to the orbit; it leans, or inclines, about $23\frac{1}{2}^{\circ}$ from the perpendicular, as shown in the diagram.

75. The Seasons. When, in June, the earth is at the point in the orbit represented at *A* in the diagram, it is seen that, owing to the inclination of the axis, the north pole lies $23\frac{1}{2}^{\circ}$ within the lighted half of the earth, while the south pole lies $23\frac{1}{2}^{\circ}$ within the dark side; and that the northern hemisphere receives more of the sun's rays than the southern hemisphere receives. Hence the northern hemisphere must then be warmer than the southern, and we say the season of *summer* prevails in the northern hemisphere, but *winter* prevails in the southern hemisphere.

Six months later, in December, when the earth reaches the position *C* in the orbit, it will be seen that the north pole is then in the dark half, and the south pole in the lighted half of the earth. The southern hemisphere then receives the most heat, and has its summer while the northern hemisphere has winter.

In March or September, when the earth is at *D* or *B*, the sun's rays reach both poles, and the northern and southern hemispheres each receive the same amount of sunshine. Each hemisphere is then cooler than in summer, but warmer than in winter. It is then the season

of *spring* on one side of the equator, and the season of *autumn*, or *fall*, on the other side.

76. Varying Lengths of Days and Nights. The points *B* and *D* in the orbit are called *equinoxes* (equal nights); for when, in September and March, the earth is at these points, the ends of the axis are on the line which divides the light half from the dark half of the earth, and rotation in this position produces days and nights of equal length all over the earth.

At all other points in the orbit the days and nights are unequal in length (except on the equator), the inequality being greatest in June and December, when the earth is at the points *A* and *C* (called *solstices*). At these times the days and nights are still equal in length on the equator, but unequal elsewhere, the inequality increasing rapidly as one advances from the equator toward either pole. Thus in the hemisphere having summer, the days are 14 hours long (nights 10) in latitude 31° ;

16 hours long in latitude 49° ; 20 hours long in latitude 63° ; and on the parallel $23\frac{1}{2}^{\circ}$ from the pole there is continuous daylight for 24 hours. Still nearer the pole continuous daylight lasts longer and longer, and at the pole it lasts for six months.

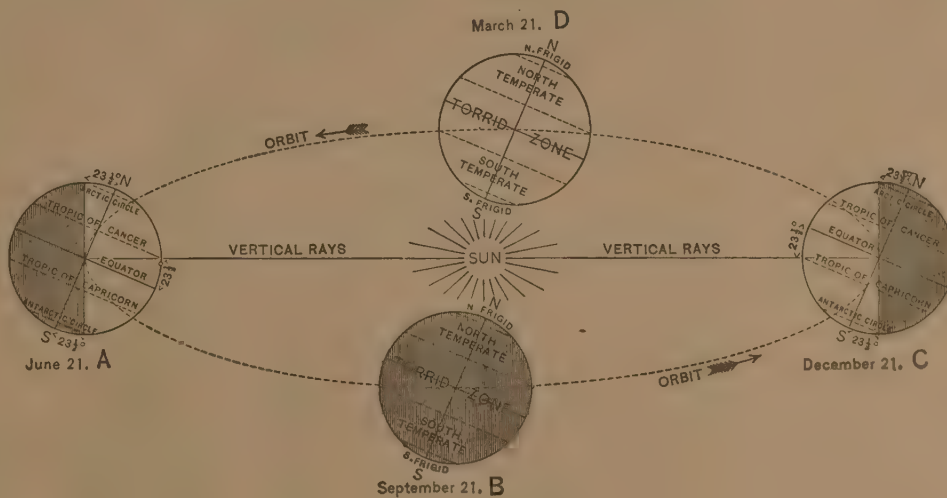
In the hemisphere having winter, the conditions are just

reversed; the nights are longer than the days, and near the pole the sun does not rise at all for weeks or months.

77. Tropics and Polar Circles. When the earth is at *B* or *D*, the sun is directly (vertically) overhead at the equator, and its rays just reach both poles. When the earth is at *A* or *C*, however, the sun's rays extend $23\frac{1}{2}^{\circ}$ beyond one pole and fall short of the other pole by $23\frac{1}{2}^{\circ}$, while the vertical rays fall on places $23\frac{1}{2}^{\circ}$ north or south of the equator. Special names are given to the parallels reached by these rays of the sun at these times. The parallels $23\frac{1}{2}^{\circ}$ north and south of the equator are called *tropics*. The northern one is the *Tropic of Cancer*, and the southern, the *Tropic of Capricorn*. The parallels $23\frac{1}{2}^{\circ}$ from the poles are called *polar circles*: the northern, the *Arctic Circle*, and the southern, the *Antarctic Circle*.

78. Astronomical Zones. The tropics and polar circles divide the earth's surface into five *astronomical zones*,—a *torrid zone*, two *frigid zones* and two *temperate zones*.

The *torrid zone* lies between the tropics. It includes all parts of the earth on which the sun's rays are ever vertical. It is thus warmer, as a whole, than the other



zones. Half the zone is always in sunlight, and the days and nights are always of nearly equal length. No part of the year is either much warmer or much cooler than any other part.

Two *frigid zones*, one about either pole, are inclosed by the polar circles. These zones include all parts of the earth where, during the year, continuous daylight or continuous darkness lasts for 24 hours or more. They are the coldest of the zones, for in summer the sun never rises high above the horizon, and during much of the winter it does not rise at all.

A *temperate zone* lies between the torrid zone and each frigid zone. In the temperate zones there is a period of daylight and a period of darkness every 24 hours, but the noticeably long days in summer and long nights in winter cause warm summers and cold winters.

Tests. Define the earth's revolution; the orbit; the inclination of the axis. Explain the cause of the seasons; of the varying length of days and nights. How are the astronomical zones determined and characterized?

Supplemental Work. By means of a lamp and a globe or a ball, illustrate the position of the earth at the equinoxes; on June 21; on December 21.

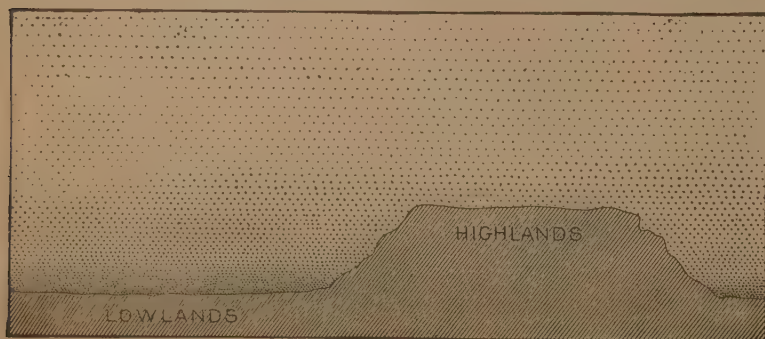
Read chapter 18 in "Carpenter's Geographical Reader, Europe."

THE TEMPERATURE ZONES

79. Temperature Zones. The true heat belts, or *temperature zones*, are not fixed and regular like the astronomical zones. They shift northward and southward with the changing seasons. Moreover, they have quite irregular boundaries. This is caused chiefly (1) by the irregular distribution of land and water over the earth, and (2) by the differences in elevation of the land.

80. When exposed to the sun's heat, land becomes warm much quicker than water does; and when warm it cools quicker than water. Hence in latitudes where the summers and winters are well marked, the land becomes warmer in summer and colder in winter than the sea in the same latitude.

81. The great body of air which surrounds the earth and extends upward to an unknown distance from its surface, is called the *atmosphere*. The upper part of the atmosphere, resting on the part beneath, compresses it and makes it *denser*. Therefore the atmosphere is densest at the surface of the sea; but on high moun-



ILLUSTRATING COMPARATIVE DENSITY OF THE AIR.

tain tops it is so thin, or *rare*, that it is but slightly warmed by the sun in the daytime, while at night it permits the heat of the sun-warmed ground to escape. The air on the lowlands, however, is so dense that it is warmed by the sun in the daytime, and also helps to keep the ground warm at night. It thus happens that the prevailing weather, or *climate*, of lowlands is warmer than that of highlands. Thus even near the equator, where snow is unknown in the lowlands, the tops of high mountains bear snow banks that are never entirely melted away.

But it must not be supposed that a person living on the top of a mountain would be always cold. For the very reason that the thin air can not take much heat from the sun's rays, the sunshine itself is hotter than on lowlands; but at night, or in the shade, the weather is cold.

82. Boundaries of the Heat Belts. The heat belts in July (when they are farthest north) and in January (when they are farthest south) are shown on the opposite maps. Each boundary line is an *isotherm*; that is, a line passing through places having the same temperature. The boundary of the cold belt has about the temperature of freezing water (30°); that of the hot belt has the comfortable temperature of a sitting room (70°).

In July, when the sun rises high over the northern hemisphere, and the summer days are long, the heat in the great land masses of North America and Eurasia is so great that the *heat equator* (line of greatest heat) and the hot belt extend far north of the tropic. It will be noticed also that at this season the heat equator lies but little north of the true equator over the cooler oceans, and that the temperate belt extends to the north pole. As July is in the winter of the southern hemisphere, the hot belt does not extend to the tropic in that hemisphere, nor the temperate belt to the polar circle. As the surface of the southern hemisphere is mostly water, the boundaries of its heat belts are comparatively regular.

Compare the January positions of the heat equator and the heat belts with their July positions. Explain the differences in position.

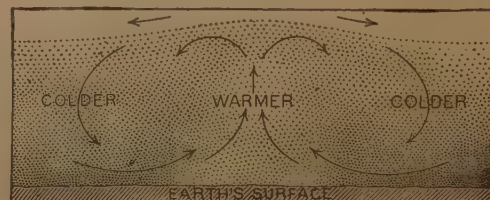
In the lowest pair of maps the boundaries of the heat belts in both January and July are drawn, in order to show the temperature changes of each region during the whole year. It thus appears that different parts of the earth have well-defined temperature conditions. Certain regions are always hot; other parts have a temperate winter and a hot summer; others again are always temperate. Some regions have a temperate summer and a cold winter; some have a hot summer and a cold winter; and in some the weather is always cold.

Tests. Define rare; dense; isotherm. How do the true heat belts differ from the astronomical zones, and why?

Supplemental Work. Draw maps of the hemispheres, showing the tropics, polar circles, and true heat belts in July and in January.

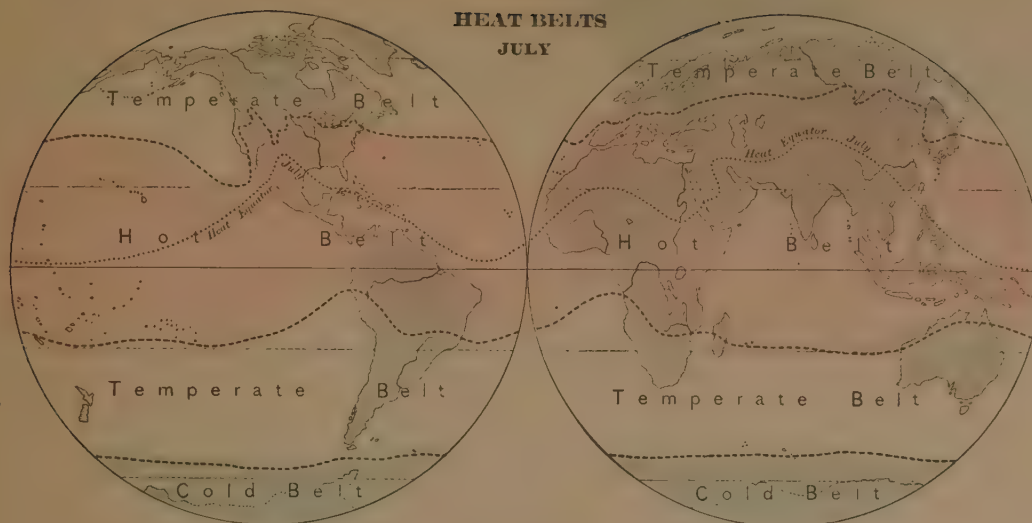
WINDS

83. Cause of Winds. When air is heated, it expands and becomes lighter, bulk for bulk, than cooler air. This helps to explain why the smoke from a fire *rises*. The heat expands the air over the fire and makes it lighter than an equal bulk of the cooler surrounding air. The cooler and heavier air, therefore, flows in below and pushes the lighter air upward, but is quickly warmed and is



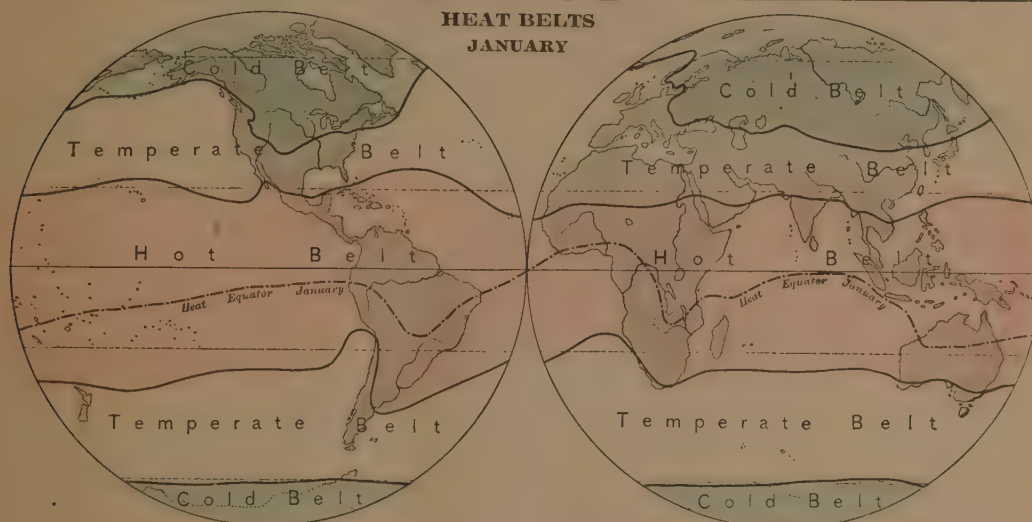
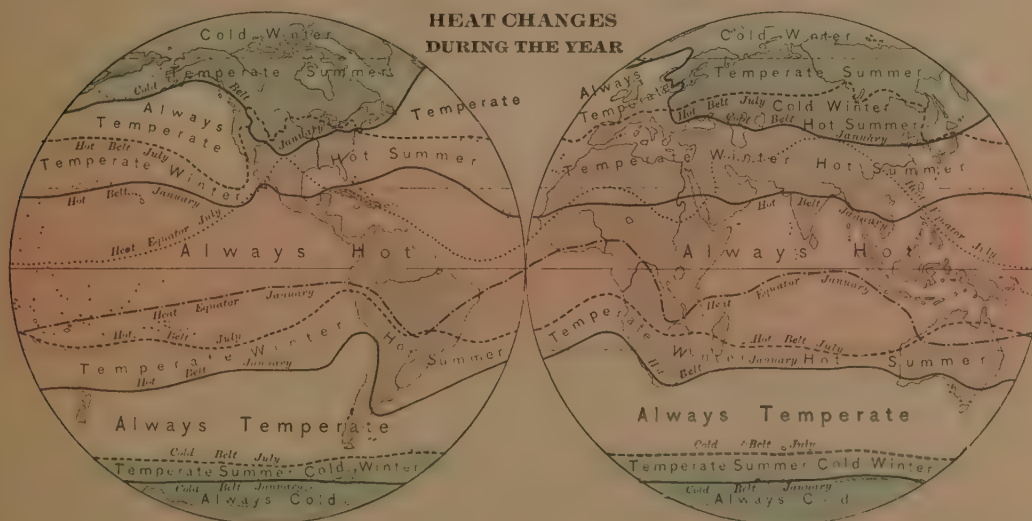
HEAT BELTS

JULY



HEAT BELTS

JANUARY

HEAT CHANGES
DURING THE YEAR

itself pushed upward by the following cooler and heavier air. Thus over the fire there results an ascending current of air which carries the smoke upward. The rising current of warm air is fed below by currents of cooler air from the sides, while the ascending air gradually cools and spreads out above; the general movement being as indicated in the diagram.

When from any cause the air over a region becomes warmer than that over the surrounding regions, an

ascending current is formed much like that over a fire. The surface currents of cooler and heavier air are called *winds*.

84. Trade Winds. Near the heat equator the air is always warmer and lighter than the air nearer the poles; hence there are nearly constant winds blowing toward the heat equator from some distance on both sides. These winds are called *trade winds*. They are gentle winds, which over the level surface of the open ocean blow steadily throughout the year in nearly the same direction. Over the uneven surface of the land they are not so steady.

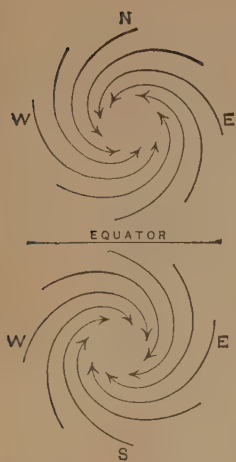
Because of the rotation of the earth, moving air turns out of a straight course as it advances, turning to the right north of the equator, but to the left south of the equator. The trade winds, therefore, approach the heat equator from the northeast in the northern hemisphere, and from the southeast in the southern.

85. Belts of Calms. The northeast and southeast trade winds, when they meet, are forced slowly upward by the cooler and heavier air behind. The place of meeting is therefore marked by a narrow region of light, fiftul breezes or of calms, called the belt of *equatorial calms*.

At the outer edge of the trade winds, in both the northern and the southern hemisphere, is a narrow belt of *tropical calms* in which the air is slowly settling down from the upper atmosphere.

86. Prevailing Westerly Winds. Beyond the tropical calms the general movement of the atmosphere is toward the poles—from the southwest in the northern hemisphere, and from the northwest in the southern hemisphere.

The winds of these regions, though most frequently from a westerly quarter, are unlike the trade winds in being exceedingly variable in direction. They frequently form into vast whirls, which are called *cyclones*, in the center of which the air is rising. Cyclones are often hundreds of miles in diameter. They move eastward with the general drift of the atmosphere, often for great distances, before dying out. Nearly all the ordinary storms in the temperate zones are cyclones.



Because of the earth's rotation, cyclones on the same side of the equator always whirl in the one direction, but on the other side of the equator they whirl in the opposite direction, as shown in the diagram.

In the belt of prevailing westerly winds the land is warmer or cooler than the sea, according to the season. Hence these winds reach the west coasts of the continents as warm winds in winter, but as cool winds in summer. For this reason the west coasts of North America and Eurasia in this belt have warmer winters and cooler summers than the east coasts.

87. Monsoon Winds. The maps on p. 21 indicate that the heat equator shifts far northward and southward during the year. The equatorial calm belt shifts with it, but not so far. Still there are parts of the torrid zone which lie far south of these calms in July, but north of them in January. As the winds blow obliquely toward these calms, it follows that in these parts of the torrid zone the winds blow from one direction in summer and from another in winter. This is very noticeable on the northern Indian Ocean and its coasts, where the seasonal winds are called *monsoons*, from a word meaning "season." In these regions the regular northeast trades prevail in winter, while in summer a monsoon wind blows from the southwest, south, or southeast.

Tests. Explain the cause of winds. Define and describe the trade winds; the calm belts; the prevailing westerlies; cyclones; monsoons.

RAINFALL

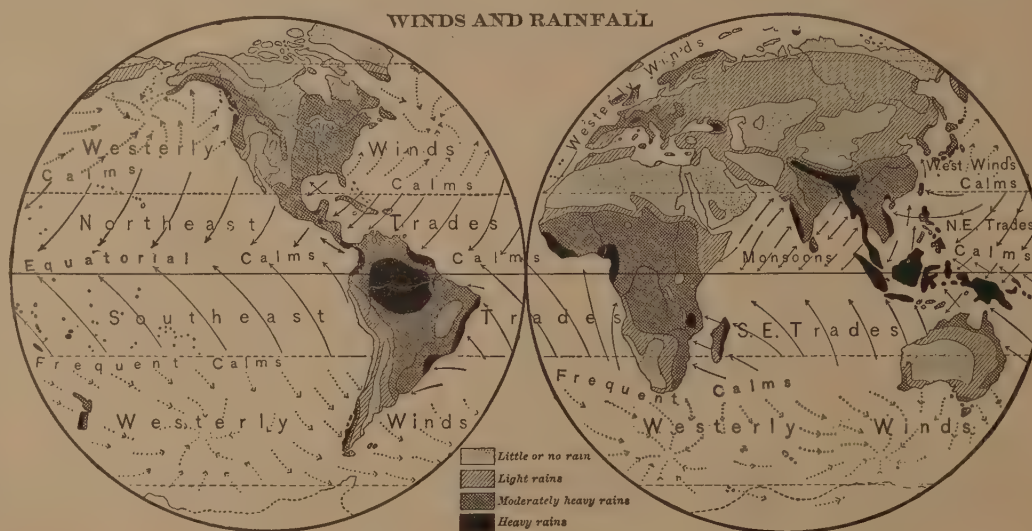
88. Moisture in the Air. From every moist surface, but mostly from the extensive surface of the sea, water is nearly always evaporating, or rising into the atmosphere in the form of invisible *vapor* (§ 47). More water usually evaporates when the water and air are warm, than when they are cold. The vapor, mingled with the air, is carried about by the winds, and thus much of that from the sea is brought over the land. When water evaporates, its impurities are left behind; thus although the water of the sea is salt, the vapor from it is fresh and pure.

89. Clouds, Rain, and Snow. When vapor-laden air is chilled, part of its invisible vapor condenses into countless tiny water drops or ice crystals, forming a *fog* or a *cloud*. If the vapor is chilled by coming into

contact with cold vegetation, we find on the foliage drops of *dew*, or ice crystals of *hoarfrost*. If the air about a cloud grows warmer, the tiny cloud drops or crystals may evaporate and disappear, but if it continues cool, they may unite into larger drops and fall to the earth as *rain*, or into flakes which may fall as *snow*.

Thus cloud, rain, and snow are formed by the *chilling* of the invisible vapor in the air. The vapor may be chilled either by rising higher in the atmosphere, or by being carried by the winds northward or southward into cooler latitudes.

90. Rainfall of the Torrid Zone. As the trade winds advance over the oceans they grow warmer, and are nearly filled with vapor when they reach the equatorial calms. Here the air rises; its vapor is chilled, and condenses into the clouds and the heavy daily rains for which the equatorial calms are noted. Over the Atlantic and Pacific oceans this rainy calm belt remains near the equator; but over the continents it shifts north and south with the seasons through nearly the entire width of the torrid zone, and, as it passes, it gives a period of ample rains to the greater part of the land surface in that zone. In the southern part of the zone the rainy season occurs in the January half of the year; but in the northern part, in the July half. In the central parts of the zone there are apt to be two rainy seasons in the year—one when



the rain belt sweeps northward in our spring, and another as it sweeps southward in our fall.

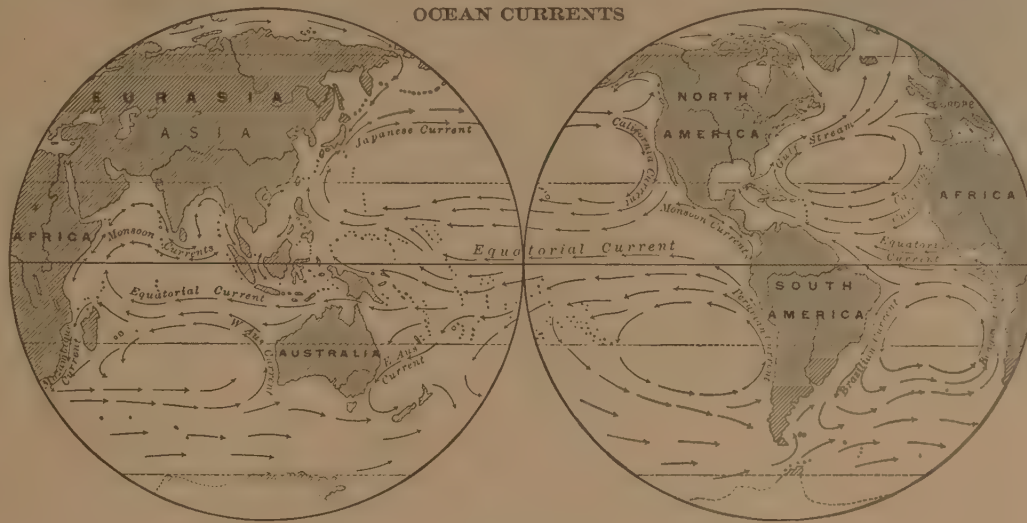
91. Where vapor-bearing winds, either in the torrid zone or elsewhere, are forced to rise over highlands, the vapor is chilled, and rainfall results on the windward side of the highland, while the region beyond the highland may receive but little rain.

92. Rainfall of the Temperate Zones. The prevailing winds of the temperate zones blow toward colder latitudes. They start from the tropical calms as dry winds, and as they cool quite slowly they do not yield much rain until they are chilled either by rising in cyclones (§ 86) or by rising over highlands. Thus highlands and cyclones are the rain producers of the temperate zones. The temperate zones in general have less rainfall than the torrid zone.

93. Rainless Regions. Near the tropics in each of the grand divisions are regions in which there is little or no rain. Most of these lie for part of the year in the belt of tropical calms, where the air is descending and growing warmer, and hence its vapor is not condensed into clouds and rain. During the rest of the year highlands to windward rob the wind of its moisture before it reaches these regions (§ 91).

Compare the maps on pp. 21 and 22 and see if you can explain the general distribution of rainfall on the land surface.

Tests. Explain clouds; rain and snow. Explain the general distribution of rainfall in the torrid zone; in the temperate zones. Give effects of highlands on rain distribution.



OCEAN CURRENTS

94. Cause. In nearly all parts of the sea there are slow movements, or *currents*, of the surface water. The currents move in the general directions of the prevailing winds, and are believed to be caused chiefly by them.

95. General Circulation. The trade winds drive the equatorial waters of all the oceans westward against the continents, where the currents turn north and south into the regions of the prevailing westerly winds. In these latitudes the currents are driven eastward across the ocean, and then a part of their water is turned toward the equator and completes the circuit, as shown on the map. Thus on each side of the equator, in both the Atlantic and the Pacific ocean, the water is thrown into a great whirl or eddy around the region of tropical calms.

A branch of the north Atlantic eddy follows the coast of Europe into the Arctic Ocean and sweeps around its basin, returning southward near Greenland.

In the Indian Ocean, there is a great eddy south of the equator, similar to those in the south Atlantic and Pacific oceans; but north of the equator the currents of the Indian Ocean move generally eastward during half of the year, and generally westward during the other half, changing as the monsoon winds change their direction.

96. Temperature. Wherever the ocean eddies move from the equator, their water is warmer than that of the surrounding ocean, and that part of the whirl is called a *warm* current; but that part of the whirl which moves toward the equator is a *cold* current, because it is cooler than the surrounding water.

Currents affect the climate of the neighboring coasts chiefly by warming or cooling the winds which blow

from them to the coasts. Warm currents keep the shores against which they flow free from ice.

97. Names of Currents. Various parts of these great surface eddies of the oceans have special names, which are printed on the map below. What is the part of each great eddy called which moves west near the

equator? What is the name of the north Atlantic current north of the West Indies? This is so called because part of it appears to flow out of the Gulf of Mexico between Florida and Cuba (p. 36). The narrowness of this channel makes the Gulf Stream here one of the most rapid of the ocean

currents. Is it a warm or a cold current? What is the corresponding part of the north Pacific eddy flowing past the Japanese Islands called? Its Japanese name is *Kuroshio*, or "Black Stream." Is it a warm or a cold current? What is the eastern part of the whirl in the north Pacific called? the eastern part of the south Pacific whirl? Are these warm or cool currents?

Tests. Name, describe, and explain the chief currents of the Atlantic Ocean; the Pacific; the Indian; the Arctic. Explain the effect of ocean currents upon climate.

Supplemental Work. Using the maps on p. 21, write a comparison of the climates of the eastern and western shores of the northern Pacific.

TOPICS ON DISTRIBUTION OF HEAT AND MOISTURE

I. HEAT. Day and night: cause; differences in length. Seasons: causes; names; times. Astronomical zones: boundaries; names. Heat belts; how and why they differ from the zones.

II. RAIN. Cause. Influence of winds: trade winds; prevailing westerlies; calms—equatorial, tropical; cyclones; monsoons. Influence of seasons. Effect of mountains.

PLANTS AND ANIMALS

98. General Distribution. Plants and animals are found in nearly all parts of the world, but they are most abundant in warm, moist equatorial lowlands. From these regions there is an irregular but gradual decrease in life forms toward the cold polar regions, and also toward the cold summits of high mountain ranges. The map on p. 24 shows the great vegetation regions.

99. Forests. In equatorial regions where the rainfall is abundant, forest vegetation is wonderfully dense



and luxuriant. The great trees stand close together, and are often covered and interlaced with hundreds of climbing vines and air plants. As there is no cold season, vegetation grows throughout the year and is always green.

In the temperate zones, with less heat and rainfall, the forest vegetation is less dense and luxuriant than that in the torrid zone. Only those plants whose fruit ripens during the warm season can live in the temperate zones. In the cold season they stop growing or die. The animals of these zones grow heavier coats of hair, fur, or feathers in winter than in summer. Some of them lie dormant or asleep in sheltered places throughout the cold season.

100. Grassy Lands. In both torrid and temperate zones where the rainfall is too light or too unevenly distributed through the year for the growth of forests, it may yet be sufficient for a growth of grass, shrubs, and other low plants. In such places are found open grassy lands. These are called *prairies*, *steppes*, *llanos*, and *pampas*, in different parts of the world.

101. Tundras. In the frigid zones it is so cold that few kinds of plants and animals can live. The soil is frozen to a great depth; only the surface thaws, even in midsummer. When the thaw occurs, a wide strip of country along the Arctic coast of America and Eurasia is converted into great swamps, called *tundras*.

Though some kinds of flowering plants are occasionally found in the frigid zones, the vegetation consists chiefly of mosses and lichens and a few dwarfed trees. Most of the animals have coats of thick fur or cover-

their juices can not evaporate easily. Many, like the cactus, are armed with thorns which prevent animals from breaking the sap-preserving bark.



DENSE FOREST.

103. Barriers. Animals are free to roam, birds to fly, and the seeds of plants are scattered far and wide by winds, currents, and animals; yet, sooner or later, both animals and seeds are likely to reach a region in which they are unfitted to live, and which thus acts as a natural *barrier* to their further diffusion.

104. Great Life Regions. The oceans which separate the continents, and the vast deserts, and very lofty mountain ranges are important barriers to the spread of animals and plants. They mark the division of the continental lands into the six great life regions shown on the map opposite. Each of these regions has many kinds of plants and



THE GIANT CACTUS.

ings of fat to keep them warm.

102. Deserts. A very dry region, even if it is warm, can have little or no vegetation. Such a region is a *desert*. Compare the rainless regions, on the rain map, with the deserts on the vegetation map.

The few plants of deserts are peculiarly adapted for a dry climate, having hard, close bark and small leaves through which

animals not found elsewhere, although different regions also have some kinds in common.

In the several transitional areas are found life forms resembling some of those in the neighboring regions, but strangely changed and adapted to fit them to their dry surroundings.

Supplemental Work. Read "How Plants Travel" in Johonnot's "Glimpses of the Animate World"; "Migration of Birds" in Lockwood's "Animal Memoirs," Part II.; Dana's "Plants and their Children."

THE AUSTRALIAN AND SOUTH AMERICAN REGIONS

105. The Australian Region is the most peculiar of the life regions. Nearly all of the native four-footed animals either are hatched from eggs or are so helpless at birth that for some time they are carried in a pouch or fold of skin on the breast of the mother.

There are many kinds of such pouched animals: many are of the kangaroo type; some are like small bears, as the koala, which is about the size of a poodle dog; still others are somewhat like squirrels, rabbits, rats, mice, or moles in size and habits. The kangaroos have short, weak fore legs and long, stout hind legs, upon which they squat upright and with which they leap over



SOME ANIMALS OF THE AUSTRALIAN REGION.

the ground. The largest kangaroo, when sitting upright, is as tall as a man, but some kinds are as small as rats.

The other animals are almost equally peculiar, including the duckbill, which lays eggs, has a bill like a duck's, four webbed feet, and fur like a mole's; large running birds, as the emu, cassowary, and kiwi; and bower birds, which build covered playgrounds or bowers, and decorate them with shells or colored stones.

Among the more peculiar plants are the leafless oak, and flowering but leafless acacia trees. Still more interesting are the eucalyptus trees, some of which are among the tallest trees in the world. On many Australian trees the leaves grow with their edges toward the sun.

During the last century white men have carried to Australia sheep, cattle, rabbits, and other kinds of animals. These have multiplied wonderfully, showing that other than pouched animals might have lived in this region had not some barrier prevented them from reaching it. The fact that the native animals and plants of Australia are so very peculiar is thought to indicate that Australia has been separated from Eurasia ever since a very early period in the world's history.

106. The South American Region has a greater variety of life forms than any other region, and, next to the Australian, is the most peculiar. It is the home of many kinds of opossums, which are pouched animals, like those of Australia.

Other peculiar animals are the sloth, which spends most of its life hanging by its long curved claws from the branch of a tree; the ant-eater, which obtains its food by thrusting its long, sticky tongue into an ants' nest; and the armadillo, which is covered with a flexible horny armor. This region is the home of the guinea pig, the tapir, the long-tailed monkey, the piglike peccary, and the jaguar, or American tiger. Several kinds of llamas live in the western highland and the southern lowlands.



LIFE REGIONS.



SOME ANIMALS OF THE SOUTH AMERICAN REGION.

Among the birds are beautiful parrots, the condor, — the largest of flying birds, — and the ostrich-like rhea.

The plants include mahogany, rosewood, logwood, and cinchona or Peruvian-bark trees; plants yielding India rubber, the vanilla bean, and useful gums. Cayenne pepper, the potato, the tomato, tobacco, and Indian corn are native in this region, but the coffee tree, sugar cane, and wheat were carried to South America by man.

The difference in life forms between South America and North America indicates that these two grand divisions have not always been connected with each other.

Supplemental Work. Bring to school a picture or a description of one Australian and one South American plant or animal.

Read chapter 6 in "Carpenter's Geographical Reader, Australia," and pp. 75-76, 92-94, 140-142, 199, 239-241, 243-244, 320-324, "Carpenter's South America."

THE AFRICAN AND ORIENTAL REGIONS

107. The African Region is specially noted for the great number of its flesh-eating animals — lions, leopards, panthers, hyenas, and jackals — and for its hoofed animals, such as the antelope, Cape buffalo, hippopotamus, giraffe, zebra, and wild ass, from which the donkey is descended.

Here also are the elephant, the rhinoceros, and many monkeys, including the huge, manlike gorilla and the smaller chimpanzee. The most interesting bird is the ostrich.

The plants include many palms, among them the oil palm and the date palm, and many acacias, most of them yielding valuable gums, such as gum arabic. The coffee tree is a native of northeastern Africa.

108. The Oriental Region is noted even more than the African for flesh-eating animals; for besides the lion, leopard, and hyena, it has the tiger, the largest, strongest, and fiercest of the cat family. Like the African, too, this region has the elephant, rhinoceros, and buffalo. Elephants and buffaloes are domesticated. Another

domestic animal, the zebu, is much like our domestic cattle, but has a hump over its shoulders.

Here are also found bears, several kinds of deer, wild swine, tapirs, mice, squirrels, and several kinds of monkeys, including the orang-outang.

Among the birds are the peacock and the jungle fowl, from which our chickens are descended.

In the hot lowland forests are many bamboos, palms, spice-yielding plants, and fine hard woods, such as teak, ebony, satinwood, and sandalwood.

The similarity of the life forms of Africa to those of the Oriental and Eurasian regions indicates that these regions have been connected as closely as at present for a very long time.

Supplemental Work. Bring to school a picture or a description of one animal and one plant belonging to each of these regions.

Read chapters 22, 23, and 33 in "Carpenter's Geographical Reader, Africa"; and chapter 27 in "Carpenter's Asia."



SOME ANIMALS OF THE AFRICAN REGION.

THE EURASIAN AND NORTH AMERICAN REGIONS

109. The Eurasian and North American Regions differ from each other less than any other two. Their plants and animals are so similar that it is believed the present barriers between the grand divisions in the Arctic region can not have existed very long. Yet the native life forms of the two regions are seldom exactly alike, and in some instances they are quite different.

In both regions are found bears, wild cats, wolves, foxes, deer, beavers, and squirrels. The white polar bear and the black bear are the same in the two regions, and the fierce grizzly bear is much like the European brown bear. The reindeer that is trained to draw sledges over the Arctic snows of Eurasia is practically the same as the wild caribou of northern North America. The European elk is the same as the American moose. The Rocky Mountain goat and the bighorn sheep are related to the many kinds of wild goats and sheep, including the ibex and chamois, of Eurasia; even the

American bison (buffalo) and musk ox are close kin to wild cattle found in Eurasia.

The puma, or American panther, skunk, raccoon, prong-horned antelope, muskrat, prairie dog, otter, and opossum are found only in America, while wild boars, camels, and wild horses are found only in Eurasia. The horse was brought to America by man.

Eagles, owls, hawks, and crows are found in both regions. Wild turkeys, buzzards, blue jays, orioles, mocking birds, and humming birds are American. Vultures, pheasants, magpies, and nightingales are peculiar to Eurasia.

Cone-bearing trees, as the pines, spruces, firs, hemlocks, and cedars, are found in both regions, as well as the oak, chestnut, beech, ash, elm, sycamore, walnut, maple, birch, and willow. But golden rod, asters, bald cypress, and redwood are found only in America; while the olive and almond are natives of Eurasia.



SOME ANIMALS OF THE EURASIAN AND NORTH AMERICAN REGIONS.



SOME ANIMALS OF THE ORIENTAL REGION.

110. Domestic Animals and Cultivated Plants are descendants of wild ones, but, under the care of man, many of them have changed so greatly that it is now hard to tell from which wild form they are descended. Eurasia seems always to have been the home of by far the greater part of mankind, and it is therefore natural that most of our domestic animals and cultivated plants are descended from wild animals and plants of that grand division.

Supplemental Work. Bring to school a picture, a specimen, or a description of some plant or animal of the North American region, and of some plant or animal of the Eurasian region.

Read chapter 46 in "Carpenter's Geographical Reader, North America."

ISLAND LIFE AND OCEAN LIFE

111. Island Life. Continental islands are usually close to the mainland, and many of them have not long been separated from it; hence their plants and animals are generally similar to those of the neighboring continent.

The oceanic islands also have received their life forms mainly from the continents. These consist chiefly of

birds which can fly long distances, and of such forms as have seeds or eggs which can be easily transported. Some of these are so light that they will float or can be carried by the winds. Some are carried in the stomachs of birds, or attached to mud on their feet.

112. Ocean Life. Many warm-blooded animals, such as whales, porpoises, seals, and walruses, live part or all of the time in the sea, but come to the surface of the water to breathe. In addition to these are hosts of true fishes that can live and breathe under water, such as sharks, mackerel, and codfish, and the many kinds of shellfish, as oysters and lobsters. The sea also contains low forms of animal life in great variety, such as jellyfishes, sponges, and coral polyps, as well as many kinds of seaweed and other marine vegetation.

Light penetrates the ocean to a comparatively slight depth; and the water, except a thin surface layer, is almost as cold as ice; hence vegetable life in the ocean is more plentiful near the surface, and especially in the shallow waters near the continents. As food is thus most abundant in these regions, animal life also is most plentiful, though a few kinds of marine animals live near the bottom of the deepest parts of the sea.

Supplemental Work. Read "Animal Life in Madagascar" in Johannot's "Flyers, Creepers, and Swimmers," and Parts III. and IV. of Johannot's "Glimpses of the Animate World."

TOPICS ON DISTRIBUTION OF LIFE

I. NUMBER OF LIFE FORMS. Effect of climate on; resulting distribution.

II. KINDS OF LIFE. Forests: equatorial; temperate. Grassy lands: cause, distribution. Tundras: cause, distribution. Deserts: cause, distribution, forms of life.

III. BARRIERS. What they are. What they cause.

IV. LIFE REGIONS. Continental plateau: central regions — common forms, peculiar forms, present barriers; outlying regions — number, most peculiar forms, chief forms of each; islands. Oceanic region: island life; sea life.

RACES OF MANKIND

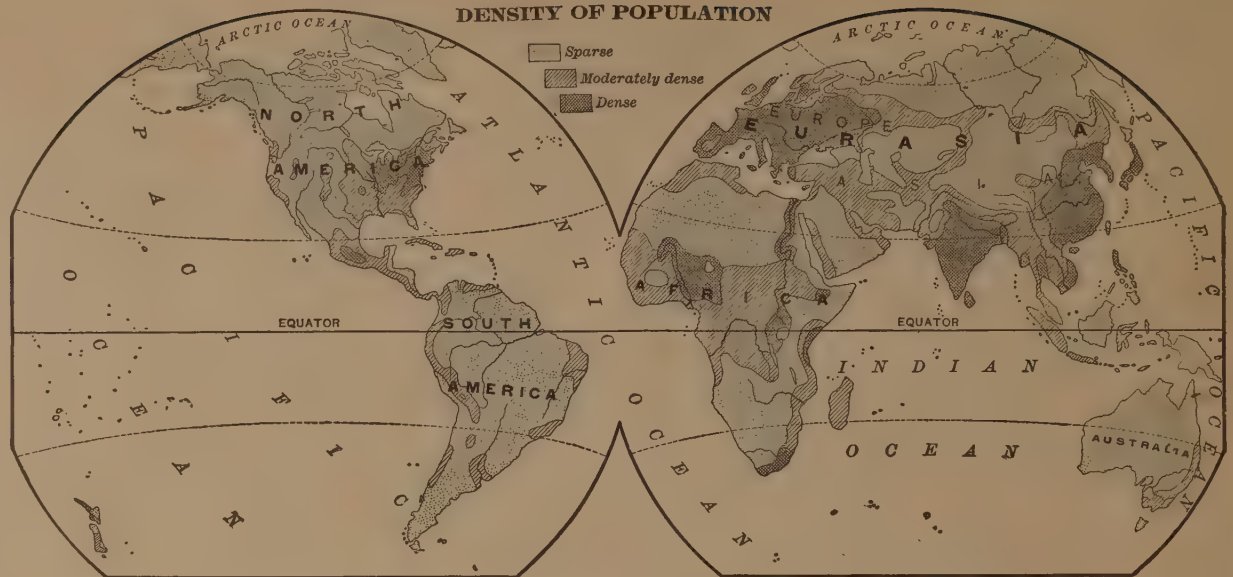
113. Distribution of Population. Man is distinguished among life forms for his intelligence. Thus he knows how to kindle a fire, and how to use it; to make the tools with which to fashion clothing and shelter; and to make weapons with which to defend himself. His intelligence also gives him the foresight to lay up food in summer for use during the winter, and to carry food with him when he travels to regions that do not supply it. Hence the barriers which prevent the spread of the other forms of life are not great barriers to man; men, therefore, live in nearly all the lands of the earth.

A region thickly peopled is said to have a *dense population*. In other regions one might travel for many miles without seeing a human being or any sign that people lived there. Such a region is said to have a *sparse population*. The regions of dense, moderately dense, and sparse population are shown on the map.

The two principal regions of dense population in eastern and southern Asia contain about half the people of the world, and the region of dense population in Europe contains nearly half of the remainder, so that these three regions of dense population in Eurasia contain fully twice as many people as all the rest of the world.

114. Races. It is believed that many ages ago men wandered away in various directions from some central region, and made homes for themselves in new lands where they found very different surroundings. To these their descendants gradually adapted themselves, just as the descendants of plants and animals gradually change and adapt themselves to changing conditions of life. Thus are thought to have arisen the *races* into which mankind is usually divided. Because of differences in the color of the skin the races may be called the *white* race, the *yellow* race, the *brown* race, the *red* race, and the *black* race.

115. White Race. The home of the white or "Caucasian" race is Europe, southern and southwestern Asia, and northern

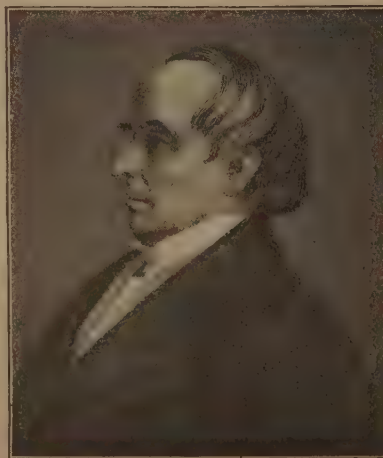


Africa. The people have fine, wavy hair, and most of them have pinkish white skin, though some are quite dark. This race includes nearly half the people in the world, and is the most civilized of all the races. There are two principal divisions of this race, the *Aryans* and *Semites*. The Aryans include most of the people of Europe and many of those of southern Asia. In recent times thousands of the Europeans have left Europe to found homes in other parts of the world, and they have practically taken possession of North and South America and of Australia, and are rapidly taking possession of Africa. The Semitic people include the Jews, Arabs, and their descendants. Their home is south and south-east of the Mediterranean Sea.

116. Yellow Race. The home of the yellow or "Mongolian" race is northern and eastern Eurasia. The people of this race have straight, coarse; black hair, almond-shaped eyes, and yellowish skin. They are nearly as numerous as those of the white race, but most of them are not so highly civilized. The Japanese are the most progressive of the yellow people, but the Chinese are by far the most numerous.

117. Brown Race. The home of the brown or "Malay" race is extreme southeastern Asia, the Philippines and other islands of the East Indies, Hawaii, and other small oceanic islands of the Pacific. The people of this race have straight, black hair and a brownish yellow skin. They are sometimes included in the yellow race.

118. Red Race. The red or "American" race occupied the whole continent of America before it was settled by white men. The



WHITE RACE.



YELLOW RACE.

people of this race are called Indians. They have straight black hair and reddish yellow or copper-colored skin; by some they are included in the yellow race. Many of them were roving savages when white men first came to America, but some tribes in the western highlands of both North and South America lived in permanent houses of stone or of sun-dried clay.

119. Black Race. The home of the black or "Negro" race is central and southern Africa and some of the Australian islands. The peoples of this race have coarse woolly or kinky hair, protruding lips, and dark brown or black skin. The black race includes some of the most ignorant people in the world.

The true *negroes* live in central Africa. The small black people who live in some of the islands north of Australia are called *negritos*, or Papuans. The natives of Australia itself have black skin but straight hair, and by some are thought to be a separate race.

MANNER OF LIFE

120. Savagery. It is probable that in very early times people lived in caves or trees; ate only such things as roots, wild fruits, insects, and the fish or wild animals they could kill. They wore no clothing but skins of animals; had few weapons except clubs, wooden spears, and bows and arrows; and only such tools as they could make out of stone, bone, and wood. The natives of Australia and the *negritos* in the Philippine Islands still live in this way, and some tribes



BLACK RACE.

clay. They learned how to cultivate grain, and, in Eurasia, they tamed the wild cattle, sheep, and goats, and kept them in herds. Their supply of food was thus surer and more plentiful. From wool and the fibers of plants they learned to weave coarse cloth. In time they learned to use metals instead of stone in making their tools and weapons. Even if they have not learned to read and write, people who can do these things can live in greater comfort than savages. They may be called

barbarians, and their manner of living, *barbarism*. Some of the negro tribes of Africa and the Mongolian tribes of northern Asia are to-day in the stage of barbarism, and most of the Indians in America when it was first visited by white men were barbarians.

122. Civilization. When at last men learned to read and write, and were thus able to leave a record of what they did and thought, they could do many other things which enabled them to live more comfortably than barbarians. They had learned to build substantial houses, and lived in permanent homes. They maintained schools of some kind; carried on some regular business, as farming, trading, or manufacturing; and had some established government to maintain order. People who live in this way are said to be *civilized*, and their stage of culture is called *civilization*.

Most of the yellow race and part of the Malay race have reached some degree of civilization. But some people learn more rapidly than others, and the Caucasian race includes the most enlightened people in the world.

GOVERNMENT AND RELIGION

123. Government. In very ancient times there was so little property that it was not necessary to make rules or laws concerning it. People owned things in common. In time of peace the father of the family or the old men and women of the tribe gave counsel to the others; and in time of war the ablest warriors were chosen as chiefs to lead the various war parties.

As men gradually increased in knowledge, however, and were able to accumulate flocks and herds or other valuable property, they frequently disputed about its ownership. The stronger often seized upon the possessions of the weaker, whom they forced to serve them.



BROWN RACE.

of negroes in Africa and of Indians in America have made scarcely more progress. Such people are called *savages*, and their manner of life is called *savagery*.

121. Barbarism. After many years in savagery some people learned how to live more easily and safely. They found that pottery could be made of



RED RACE.

In this way, especially in Europe, two classes of people were developed: the rich and powerful families, who made all the laws; and the great mass of common people, who at last came to think that the powerful families were nobles born to rule them.

Still later the strongest of the nobles claimed to be the *king*, or *monarch*, of a great region surrounding his home, and to own all the land and the people living on it; but he gave parts of the region to the weaker nobles living on it, on condition that they should help him in war and acknowledge that he, and one of his family after his death, should be monarch. Thus *monarchies* were established in many parts of Eurasia.

124. Monarchies. The first monarchies were *absolute*, or *despotic*; the monarch made all the laws and could put any of his subjects to death. Only a few absolute monarchies still exist; for as the people gradually became more civilized, little by little they took much of the power away from the monarch. In these more civilized countries the laws are made by a body of men, composed partly of nobles and partly of men chosen from the common people, while the monarch enforces the laws thus made. Such are the governments of most of the countries of Europe to-day. They are called *limited* or *constitutional* monarchies.



ST. PAUL'S, LONDON.

125. Republics. In some countries, when the common people became strong and enlightened, they decided to take the powers of government into their own hands and to do away entirely with the monarch and nobles. In such countries the people elect a body of men to make the laws, and a chief officer, or *president*, to see that the laws are executed. These men hold office only a few years, and then others are chosen to succeed them. Such a government is called a *republic*. The United States is a republic.

126. Religions. While the wisdom and necessity of human government are recognized, most people believe in a higher power than man, this belief forming the basis of their *religion*.

The *Jewish* religion was proclaimed by Abraham in southwestern Asia about four thousand years ago. The Jews believe in one God and in the Old Testament.

Jews are now found in all civilized countries, but most of them live in Europe.

Christianity teaches that Jesus Christ is the Son of God, and the Savior of mankind. Christians believe in one God and in the Holy Bible. This is the prevailing religion in Europe, America, and the other more highly civilized parts of the world. About one fourth of mankind profess Christianity. The chief divisions are the Catholic, the Greek Orthodox, and the Protestant churches.

Mohammedanism was proclaimed by Mohammed, about thirteen hundred years ago. Mohammedans believe in one God, but the Koran is their holy book. This is the prevailing religion in most of northern Africa and southwestern Asia. Its followers include about one tenth of the people in the world.

Brahmanism is a very old religion of southern Asia. Its chief god is called Brahma. This religion divides

its followers into classes, or *castes*, and the members of different castes are not allowed to eat the same kind of food, follow the same business, or associate with one another. More than one tenth of mankind are Brahmanists.

Buddhism is professed by most of the people of eastern Asia, and its followers embrace more than one third of the human race. It denies the existence of a soul, but teaches charity and kindness to all living things.

Paganism. The more ignorant tribes of men are pagans. They believe in many gods or spirits, and worship them, or idols representing them. There are about as many pagans as Brahmanists.

ST. BASIL'S, MOSCOW.



ST. PETER'S, ROME.

AGRICULTURE

127. Industries. The production of raw material for food, clothing, and shelter gives rise to five great industries: *agriculture*, *herding*, *fishing*, *lumbering*, and *mining*. The fitting of raw material for use gives rise to the industry of *manufacturing*; the distribution of raw material and the manufactured product gives



WHEAT HARVESTING ON THE CENTRAL LOWLAND OF THE UNITED STATES.

rise to the industry of *commerce*, or trade and transportation. These seven industries afford occupation and the means of livelihood to the greater part of civilized mankind.

128. Agriculture, or the cultivation of plants for man's use, is the most important of the industries. It gives occupation to about one fourth of the world's civilized workers.

Plants need for their best growth the proper food and the right amount of heat and moisture. Part of their food is taken from the ground through their roots, but as all plants do not require the same food, different crops are planted in successive years. This *rotation of crops* greatly retards the exhaustion of plant food in the soil. Occasionally the soil is replenished with plant food by adding manure or other *fertilizer*.

The supply of moisture may be regulated by *draining* if there is too much, and by *irrigation* if there is too little. Irrigation consists in conducting water in a canal from some stream or reservoir, and distributing it over the land in ditches.

Among the best farming lands of the world are the plains drained by the great rivers of the temperate regions; but wherever there are soil, warmth, and moisture sufficient for plants, food may be raised.

129. Cultivated Plants. The chief food plants store nourishment in seeds which are called *grain*. Wheat, rice, corn, rye, oats, and barley are the most important kinds of grain.

Wheat grows best in a rather cool climate, and hence is extensively cultivated in the lowlands of both temperate zones, and in the highlands of the torrid zone. It forms the chief food of the people of America and western Europe.

Rice is raised in rather warm climates, and chiefly in localities that can be easily flooded.

Corn thrives well wherever the weather is hot and moist during its short growing season. It is one of the chief foods both of man and of the domestic animals.

Rye, *oats*, and *barley* are cultivated in the cool parts of nearly all countries in the temperate zones.

There are other plants used for food, some of which, like the potato, store nourishment in their underground stems, while others, like the

beet, store it in their roots. About half of the sugar used in the world is made from the beet. The other great sugar-producing plant is the sugar cane, a kind of grass which looks much like Indian corn. It requires a hot, moist climate.

Of *fruits*, the apple is the most important of the temperate zone, since it can easily be kept throughout the winter. Oranges and lemons, also much used, are raised in warmer regions, and bananas and dates form the chief food of man in some tropical countries.

Tea is grown in both temperate and tropical parts of the eastern hemisphere, while *coffee*, a native of the tropical climate, is cultivated in both hemispheres.

Fibers. Cotton is the most important plant cultivated for other purposes than food. From this plant is obtained a fiber of which is made the most widely used cloth in the world. The cotton-producing regions of the world lie in the moist lowlands of the temperate regions. Flax, from which linen and linseed oil are obtained, and hemp and jute, from which rope and cordage are manufactured, are also fiber plants. They grow in both warm and cool countries.

Supplemental Work. Bring specimens of useful plants to school to form a collection. Bring to school a description of one grain, or root, or fruit, used by man as a food; of one useful plant not used for food.

HERDING

130. Domestic Animals. The raising of domestic animals is closely associated with farming, and nearly every farmer pursues this industry also to some extent. In many parts of the world, however, especially in the drier parts of the open grassy regions, where the rainfall is not sufficient for successful farming, the herding of horses, cattle, and sheep is the chief occupation.



IRRIGATED ORCHARD, ARIZONA.



CATTLE RAISING, WYOMING.

The draught and pack animals differ in different parts of the world, the most useful being the horse, the mule, the donkey, the camel, the elephant, the water buffalo, the ox, the llama, and the reindeer. The dog also is used in certain countries.

Cattle, the most important food animals, supply milk, butter, cheese, and beef. Hogs are raised in enormous numbers, especially in corn-producing regions, and also in forest regions where they can feed on the wild nuts. Though the flesh of sheep and goats is eaten, these animals are raised chiefly for their wool or hair, which is converted into clothing.

Much of the meat of these animals is eaten fresh, as it is possible to send live cattle and sheep long distances in cars or steamships. Fresh dressed meat may also be shipped in iced or refrigerator chambers. Meat may also be canned fresh, preserved by salting or smoking, or made into extracts.

When these animals are slaughtered, all parts of the carcass are now used. Bones, horns, and hoofs are made into combs, buttons, and glue. Hair and refuse wool are made into felt; bristles into brushes; even the blood is used to make animal charcoal.

Poultry are raised not only for food but also for their eggs. Both the live fowls and their eggs are articles of export from many countries.

From the alpaca, which is kept in large herds on the great highland of South America, and in some parts of the world from the camel, hair for cloth making is obtained.

Supplemental Work. Supply to the school collection such animal products as you can obtain. Bring to school an account of one domestic animal, describing it, and telling where and how it is raised and what its uses are.

FISHING

131. Fisheries. The most valuable fishing regions are the shallow parts of the sea near the shores of the continents, in the north temperate zone. Among these

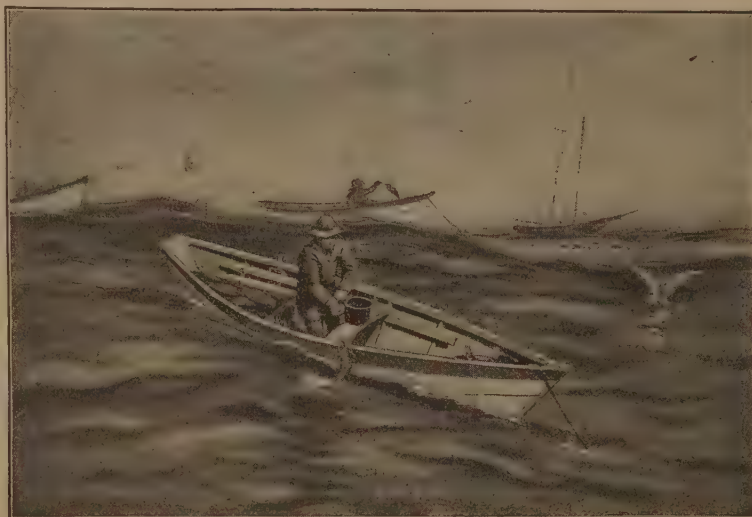


LUMBERING, WASHINGTON.

are the great cod fisheries on the "Banks" south of Newfoundland (p. 36), and the cod and herring fisheries of northwestern Europe. The salmon fisheries of the northwestern coast of America, and the oyster fisheries on both coasts of the north Atlantic, are also very valuable.

The most valuable fresh-water fish are the whitefish from the Great Lakes of North America and from the lakes of northern Europe.

Certain sea animals other than fish are also considered valuable for other purposes than food. Among these are the fur seal of Bering Sea; the whale, prized for its oil and the whalebone from its mouth; the sponge; the pearl oyster; and coral.



COD FISHING ON NEWFOUNDLAND BANKS.

Cod are usually caught by means of long lines, or *trawls*, having baited hooks attached every few feet. The trawls are held in place by anchors, and visited every day, the fish removed, and the hooks rebaited. The fish are cleaned and salted, and later, on shore, are dried in the sun before being sent to market.

Herring and mackerel, which are smaller than cod, are usually caught with long nets, called *seines*. Herring are salted, smoked, and dried, but mackerel are preserved in a strong brine. Very small herring, caught on the North American coast, are canned in oil, and

called *sardines*, though the true sardines are caught in great numbers only off the south and west coasts of Europe.

Salmon are caught in rivers, up which they come from the sea to lay their eggs. These fishes are canned in great numbers on the west coast of North America.

Oysters live upon the bottom of shallow shore waters and are obtained by dredging, or with tongs. Immense quantities of them are taken along the coasts both of Europe and of America.

Pearl oysters, beautiful coral, and the sponge, the skeleton of which is the sponge of commerce, are found in the warmer parts of the sea.

Supplemental Work. Supply to the school collection some product of the sea. Bring to school an account of some sea animal or plant, or of the fisherman's life. Find out about the Fish Commission at Washington, and its work.

LUMBERING

132. Forest Products.

From the forests come wood for fuel and lumber for houses and for other purposes. In addition many other useful products are obtained from trees. The pines yield tar, pitch, rosin, and turpentine. The sap of several kinds of tropical trees and huge climbing vines yields rubber; oak, hemlock, and other barks are used in tanning leather; much paper is made from wood ground to a pulp; and many trees yield drugs and dyewoods.

In many places trees are cut in the autumn and winter by lumbermen, who at these seasons live in camps in the forests. After the trees are felled they are cut into logs, which during the floods are floated down the nearest stream to the sawmill. Logs cut on a mountain side are often slid down artificial chutes. In some places railroads are built to carry logs to the mills or to the water. At the sawmills the logs are cut into square timber or into planks.

The various kinds of woods differ in grain, hardness, and durability, and are for that reason suited to different uses.

Supplemental Work. Supply to the school collection specimens of wood and forest products. Bring to school a description of one kind of useful tree, or an account of methods of lumbering. Find out about Arbor Day.

MINING

133. Mining is the process of getting minerals out of the earth. The most useful minerals are coal, iron, petroleum, copper, gold, silver, tin, lead, zinc, and building stones.

134. Coal. The most important branch of this industry is the mining of coal, which is extensively used for fuel and for making illuminating gas. Coal exists in all the grand divisions, but by far the greater part used is mined in western Europe and eastern North America.

We have learned (§ 71) how coal was formed. In some places the coal beds crop out at the sides of a valley or of a mountain, and the



ANTHRACITE COAL MINE, PENNSYLVANIA.

coal is mined by blasting tunnels into the bed; but in many places the coal can be reached only by sinking a deep hole, or shaft, to the bed. From the bottom of the shaft tunnels are made in the coal bed, and then the coal between the tunnels is taken out. Tracks are laid in the mines, and on them trains of cars dragged by mules or electric engines carry the coal to the mouth of the mine, or to the foot of the shaft, up which it must be hoisted.

135. Iron. The next most important product of the mining industry is iron. Of all the metals iron is the

most useful. One of its useful forms is steel.

Like most of the other metals, iron is not found pure, but is combined with other substances, forming *ore*.

Iron ore is found in nearly every country, but those mines which are most convenient to coal have been most worked; hence the great iron-mining regions of the world are usually in or near the great coal-mining regions.

Iron ore is sometimes found near the surface of the ground, where it is collected by pick, shovel, and scraper; but iron ore, as well as the ores of the other metals, is also mined underground in much the same manner as coal is mined.

The ore is put into great furnaces with coal, coke, or charcoal, and some *flux*, usually limestone. The burning of this fuel melts the ore, and the metal iron, made more liquid by the flux, then flows off nearly pure. This process is called *smelting*.



STEEL MAKING (BESSEMER CONVERTER).

136. Gold and Silver are much scarcer than many of the more useful metals. One or both of them are used as money throughout the civilized world.

The rock bearing the gold is crushed to the finest powder in a "stamp mill," and the powder is then washed with water containing a substance which extracts all the gold but leaves the rock.

Fine pieces of gold, or "gold dust," are also found in the rock waste of gold-bearing rock, from which the gold may be separated by washing, and sometimes by collecting with quicksilver.

Stone is used extensively not only for building, but also for making roads and pavements. Slate rock is used for roofs, and much limestone as a flux in smelting iron. Great quantities of certain kinds of limestone are made into cement and lime.



GOLD MILLING AND WASHING, MONTANA.

Supplemental Work. Bring to the school collection specimens of minerals, metallic ores, or stones. Bring to school an account of one mineral product, or of one method of mining or quarrying.

MANUFACTURING

137. Preparing raw materials for the use of man constitutes the industry of *manufacturing*.

Formerly most manufacturing was done in the homes of the people by the aid of simple tools or machines operated by hand, but nowadays it is done chiefly in factories by machinery run by steam or electricity.



MACHINE SHOP, NEW YORK.

138. Manufacturing Regions. Man now has engines to run machinery, and railroads and steamships to bring fuel and raw material to the factories and to distribute the manufactured goods; hence manufacturing towns grow up at convenient localities in various parts of the civilized world. Countries in which coal and iron are extensively mined, as in eastern North America and western Europe, have become most active in manufacturing. About one fourth of the white race are engaged in this industry.

139. Chief Manufactures. The chief manufacturing industries are the weaving of cloth, the smelting and working of metals, and the preparation of foods.

Textiles. Cotton is the most important cloth-making material. Wherever it is grown, the fiber is separated from the seed and then pressed into bales by machinery. The bales are then shipped to the mills and factories, where the fiber is spun and woven into cloth.

Somewhat as cotton is treated, so also is wool; silk; flax, of which linen is made; and jute, used for making coarse cloth.

Metals. More iron and steel are used in manufactures than all the other metals put together. Copper, tin, lead, and zinc are used in the manufacture of hardware, and copper wire is used in electrical work. Tinware is made of sheet iron to which has been given a thin coating of tin. Lead is made into pipe. Zinc is used as a coating for iron, forming what is called galvanized iron; and when mixed with copper it forms brass.

Food. The conversion of the various grains into flour and meal, the canning of fish, meat, fruit, and vegetables, and the making and refining of sugar afford employment for thousands of people.

Supplemental Work. Find out about James Watt, Sir Richard Arkwright (Smiles's "Self-Help," Eclectic Readings), Eli Whitney and the cotton gin (Harris's "Stories of Georgia").

COMMERCE

140. Commerce. Different parts of the world produce different things, and what is produced in one part is often needed in another; hence the people of different regions sell their surplus products to one another. The buying, selling, and carrying of commodities make the industries of trade and transportation, which together are called *commerce*. When commerce is carried on between parts of the same country, it is known as *domestic* commerce, but

FLOUR MILL, MINNESOTA.



COTTON MILL, MASSACHUSETTS.

trade between different countries is called *foreign* commerce.

Railroads and steamships have made transportation cheap, rapid, and certain, and thus have made profitable the factory system of manufacture. They have made it possible also to send raw materials to distant regions to be manufactured, and to carry food to the manufacturing people from distant agricultural regions.

Wool from Australia, cotton from our own country, and silk from Asia are sent to Europe to be made into cloth, part of which is often sent back to be sold in the very countries where the raw materials were raised; and the people of the western part of Europe rely upon the people of North America for much of their wheat, flour, beef, and pork, and upon Australia for part of their mutton. Tea comes from Asia; coffee from South America; and most of our sugar from the West Indies, South America, and the islands of the Pacific.

As only the products not used at home are exported to other countries, foreign commerce forms a very small part of the whole commerce of the world.

141. Means of Transportation. Goods are transported not only on railroads and ships, but also by teams on



A MODERN OCEAN STEAMSHIP.

common roads, and by boats on rivers and canals. Teaming is necessary in carrying goods to all the commercial routes, but it is the most expensive mode of transportation. A team pulls so small a load and travels so slowly, that if the distance is great, the food and care of the team will cost as much as the load is worth. Transportation by river, canal, or sailing vessel on the ocean is very cheap, though much slower than by railroad or steamship. In the more civilized countries most of the traffic is carried by railroad, and about half of the ocean traffic is by steamship.

142. Aids to Commerce. Telegraph cables, laid on the sea bottom, connect all the continents, so that information can be sent instantly to the most distant countries; and postal routes have been established, by which, at little cost, letters may be quickly and surely delivered to any place in the world. The telegraph, the telephone, and the post office are invaluable aids to commerce.

In order to promote foreign commerce, each country has, in all the large trading cities in the world, men called *consuls* to look after the interests of its sailors and merchants who trade there, and to collect information about what the people of the country produce and what they need. Most civilized countries also issue maps of the coasts and harbors, and build lighthouses and life-saving stations along the coasts. In many countries the harbors and rivers have been deepened or improved. In some countries the government owns the railroads, and in nearly all civilized countries it has aided in building them.

Supplemental Work. Make a list of the articles on the breakfast table this morning and try to find where each article came from, and how it was manufactured. Write a history of one article on your list. Find whether any article produced in your neighborhood enters into our foreign or domestic commerce. Find out about Robert Fulton, Samuel F. B. Morse, and Thomas A. Edison (Perry's "Four American Inventors") and George Stephenson (Smiles's "Self-Help," Eclectic Readings).



RAILROAD YARD AND HARBOR, TACOMA, WASHINGTON.

TOWNS AND CITIES

143. Centers of Population. Most of the trade and manufacturing of the world are carried on in towns and cities. Although the raw materials themselves are seldom produced there, they are usually sent there to be manufactured and sold. In general, therefore, cities and towns are centers of population in which goods are assembled, manufactured, or distributed.

Thus a city is a convenience both to producers and to purchasers, and therefore it must be within easy reach of both. Hence cities have usually grown up at good harbors, or on navigable rivers or lakes, or at the junction of railroads. Many are at waterfalls or rapids, or near mines of some kind. Among the cities and towns, the one that can be most easily reached by the greatest number of people, and by the greatest amount and variety of products, is sure to grow to be the largest. Many of the large cities of the world started as military posts.

Supplemental Work. Try to find out why the town in which you live, or the town nearest your home, is located where it is. It is located just where it is for *some* reason.

If you live in the city, write an account of some visit which you have made to the country; if you live in the country, write a description of the largest town which you have seen, and tell how it differs from the place where you live.

TOPICS ON MAN AND HIS PROGRESS

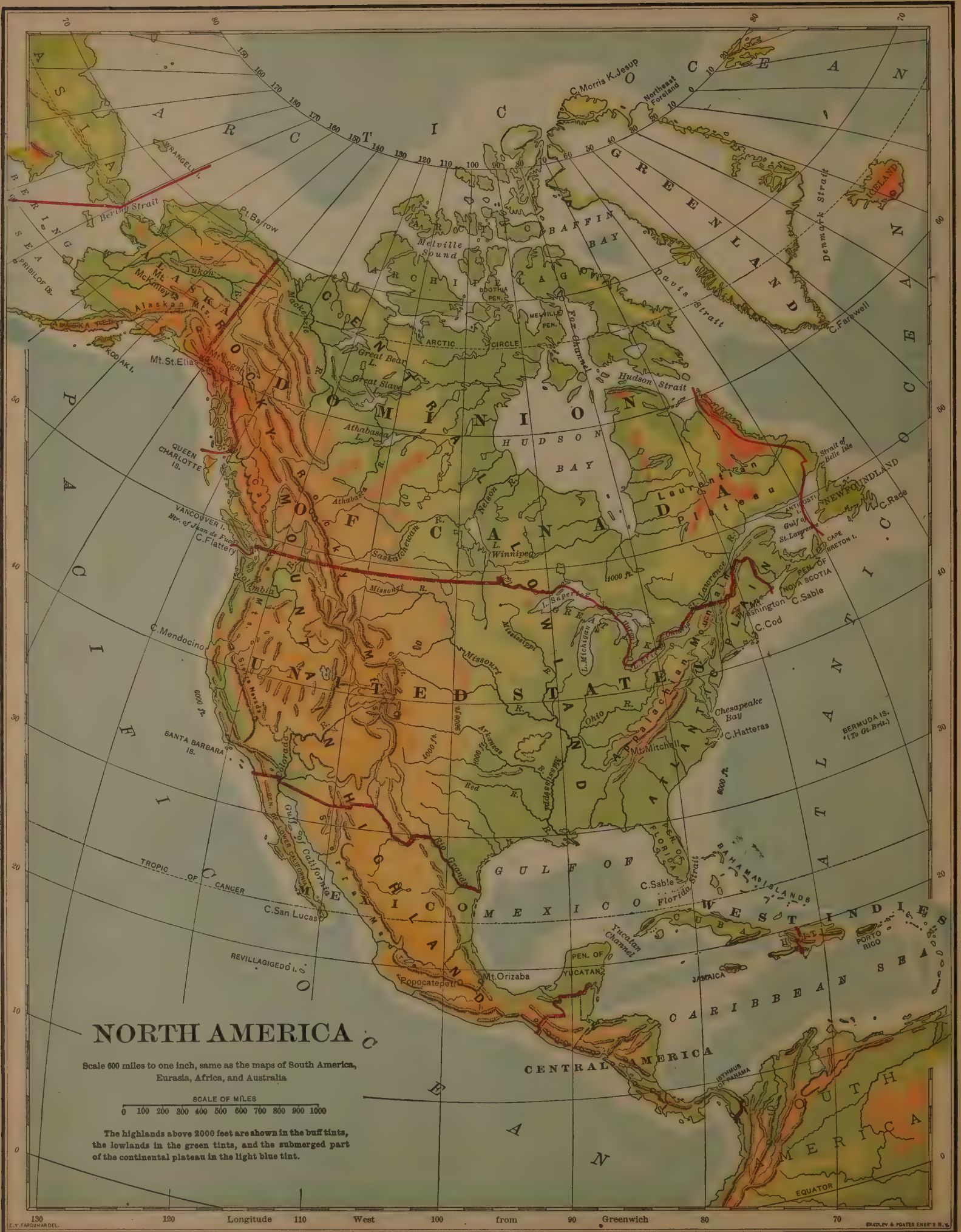
I. POPULATION. By number: dense; moderate; sparse. By races: white; yellow; brown; red; black.

II. PROGRESS. In intelligence; in culture; in government.

III. INDUSTRIES. Procuring material: vegetable; animal; mineral. Transforming materials: by hand; by machinery. Exchanging goods: transportation — by land, by water; trade — domestic, foreign; aids.



A BUSINESS STREET, NEW YORK.



NORTH AMERICA

Scale 800 miles to one inch, same as the maps of South America, Eurasia, Africa, and Australia

SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000

The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental plateau in the light blue tint.

NORTH AMERICA



LAKE LOUISE, IN THE ROCKY MOUNTAINS OF CANADA.

PHYSICAL FEATURES

The Map Exercises (in small type at the beginning of sections) form an important part of the course.

Location, Coast Features, and Relief.¹ What ocean is north of North America? east? west? What strait separates North America from Asia? What isthmus connects it with South America? In what zones does it lie?

Name a bay and two peninsulas on the north coast. Name two gulfs and a sea on the east coast. What three peninsulas are on that coast? Name a gulf, a sea, and two peninsulas on the west coast. Which coast seems to be the longest? which the most regular? Off which coast are the largest islands? Name the largest. What island is east of the Gulf of St. Lawrence? What island chain partly incloses Caribbean Sea? Name the largest island on the west coast.

In which part of North America is the great highland region? In what direction does it extend? Measure its greatest width, using the scale of miles. What long mountain chain extends through the central part of the highland region? What three ranges border the highland on the west? Name two highland regions in the eastern part of North America. Which part of North America is a great lowland plain? Compare the Atlantic and Pacific coast plains in width.

North America, in which we live, is one of the natural grand-divisions of the continental plateau (§ 20). It is the third in size, and it includes less than one fifth of the land in the world. It is roughly triangular in shape, but the northern and eastern sides are quite irregular.

¹ In the physical maps of this book, the dark green indicates the parts of the lowlands which are less than 1000 feet above the sea, while the light green indicates such parts as have an elevation between 1000 and 2000 feet. The lightest buff tint shows the lowest parts of highlands, where the elevation is between 2000 and 4000 feet; the medium buff tint shows regions between 4000 and 6000 feet; the darkest buff tint shows regions which are over 6000 feet above the sea. The lines separating the different tints and colors thus indicate definite elevations, and are called *contour* lines.

The summits of the great mountain ranges of the west are from two to nearly four miles above the sea. The plateau from which they rise is itself a mile high. Mount McKinley, in the north, is the highest peak in the grand division. East of the Rocky Mountain chain the highlands slope gradually to the Central Lowland; west of this chain the plateau surface is broken by short mountain ranges and deep canyons. Throughout the western part of the highland region there are numerous volcanoes, some of which are still active. Old outflows of lava, known as "lava fields," are common throughout the region, and earthquakes are frequent.

Through the western highlands extends the divide separating the part of the grand division which slopes to the Pacific ocean from the part which slopes to the Atlantic and Arctic oceans. This is called the *continental divide*.

The eastern highlands, though less extensive, are much older than the western highlands. They have been worn down by ages of weathering until their highest peaks are but little higher than the plateaus at the foot of the Rocky Mountains. Mount Mitchell, in the south, a little over a mile high, is the loftiest point of the Appalachian chain. Mount Washington, farther north, is nearly as high. The Laurentian plateau, still farther north, is generally low, and contains many isolated hills.

Between the western and the eastern highlands is the broad Central Lowland, extending from the Gulf of Mexico to the Arctic Ocean.

Drainage. What river of the Central Lowland flows northwest to the Arctic Ocean? What three large lakes are in its basin? What river flows northeast to Hudson Bay? What lake is in its basin? What large river

flows into this lake? What river flows northeast to the Gulf of St. Lawrence? Name five "Great Lakes" in its basin. What great river of the Central Lowland flows south to the Gulf of Mexico? What is its longest tributary? Name a river which flows southeast to the Gulf of Mexico.

Name the three largest rivers of the Pacific slope. Into what body of water does each flow?

In what direction do most of the rivers of the Atlantic plain flow? How do they compare in length with those of the Central Lowland? with those of the Pacific slope?

There are eight great river systems in North America, reckoning the Nelson-Saskatchewan as one system. Five of them lie partly in the Central Lowland, and only three lie on the Pacific slope. All these river systems except the St. Lawrence system have their headwaters in the Rocky Mountain chain, which for a great part of its length forms the continental divide.

The Mississippi-Missouri is the world's longest river, and as it is unobstructed by falls or rapids for a long distance from its mouth, it is of great commercial importance.

Just below the Great Lakes the St. Lawrence is obstructed by rapids, so that canals are necessary for the ascent of boats; but below the rapids large seagoing vessels ply during that part of the year when the river and gulf are not blocked by ice.

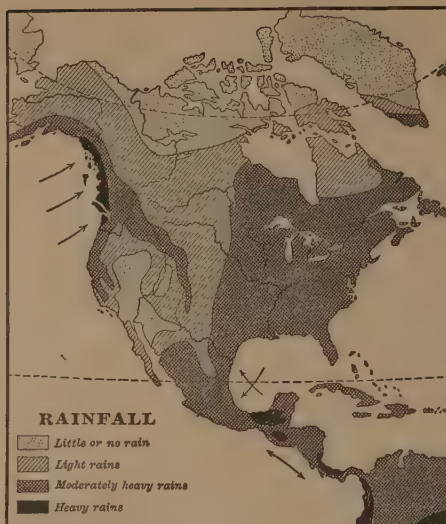
The waters into which the Mackenzie, Yukon, Colorado, and Mississippi flow, are nearly tideless, and consequently these rivers have built great deltas (§ 57). There is a bar at the mouth of the Columbia, though it is well covered with water even at low tide. The estuary (§ 28) of the St. Lawrence is a submerged valley.

North of the Missouri and Ohio rivers the divides between most of the streams in the great Central Lowland are so low as to be almost imperceptible. There are thousands of lakes in this region (§ 60). Many of them are so close together that the usual mode of travel used to be by canoes; these were carried on the shoulders of the travelers from one lake to another across the low

divides. Such a divide is therefore called a *portage*, from a word which means "to carry."

Climate. This small map of heat belts shows the different temperature regions of North America, with their seasonal changes (§ 82).

The central part of the west coast is al-



ways temperate, because the prevailing westerlies, which have the nearly uniform temperature of the Pacific Ocean, warm the coast in winter and cool it in summer (§ 86). By the time the winds reach the eastern part they have acquired the temperature of the land over which they have traveled; hence the eastern part is colder in winter and hotter in summer than the west coast.

The map at the top of this page shows the distribution of rainfall over North America. Along the northwest coast the prevailing westerly winds deposit copious rainfall as they ascend the abrupt slope of the great highland

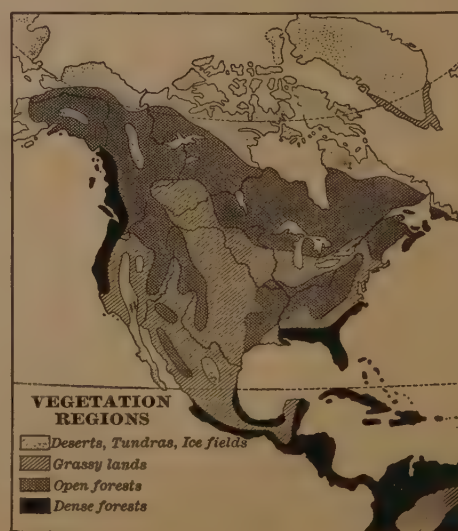
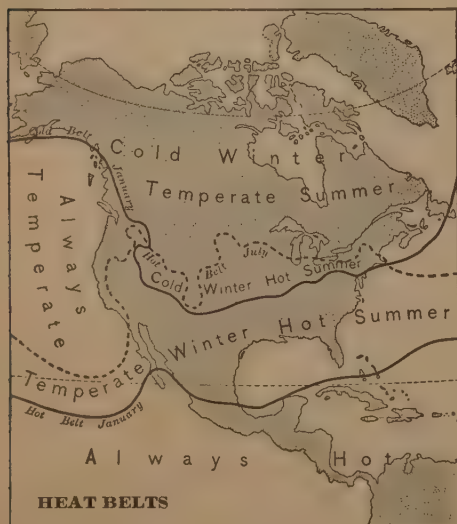
region. The region near the head of the Gulf of California is crossed by the tropical calms and hence has but little rain (§ 93 and map). In the southern part of North America the northeast trade winds bring copious rains to the east slopes in winter; but in summer, when the heat equator lies farthest north, monsoon winds from the Pacific bring rain to the southwest coasts. Farther north, the westerly winds, which have lost their moisture on the west side of the Sierra Nevada and Cascade Mountains, reach the plateau as dry winds. In the eastern half of the grand division, where the southerly winds in cyclones bring vapor from the Gulf of Mexico and the Atlantic, there is abundant rainfall.

Supplemental Work. Draw a circle to represent the western hemisphere, and make a sketch map showing what part of the hemisphere is covered by North America. Draw, on a larger scale, the outline of this grand division. Model North America. Write a comparison of the climates of the eastern and western coasts of North America.

VEGETATION AND ANIMALS

Vegetation. This map of the vegetation regions of North America, when compared with the maps of the heat belts and of rainfall, shows the influence of climate upon vegetation. In the regions of abundant rainfall in the warm south and the temperate west, heavy forests

cover much of the surface. In the east, where the summers are long and the rainfall is ample, open forests and grassy prairies (§§ 99, 100) are found. In the drier region farther west the forests are confined chiefly to the mountain sides, which receive more rainfall than the adjacent lower country. West of Hudson Bay





SOME ANIMALS OF NORTH AMERICA.

the heat and moisture are sufficient for a sparse growth of forest, but farther north the summers are too short, and most of this region is barren land or tundra (§ 101).

Animals. (Review § 109.) Along the Arctic coasts the largest animals are the polar bear and the musk ox. Farther south, in the open forests, range the moose, the elk, and vast herds of woodland caribou, or American reindeer. Here the brown and black bears, the lynx, wolverine, and smaller animals, such as the beaver, otter, and mink, are hunted or trapped for their fur, which grows fine and thick on the approach of the long, cold winter, and is of great commercial value. In the highlands of the west are the grizzly bear, the bighorn sheep, the Rocky Mountain goat, and the puma, or American panther.

Throughout the eastern part of the grand division, south of the Great Lakes, the larger native animals have been nearly exterminated. In that region are vast numbers of domestic animals,—horses, cattle, sheep, hogs, and chickens,—whose ancestors were brought to America from Eurasia by the white man.

In the dry transitional region (§ 104) of the southwest are found animals of both the North American and the South American region, as well as many peculiar scorpions, lizards, and other reptiles.

In the hot lowlands of the southern part of the grand division, animals of the South American region are com-

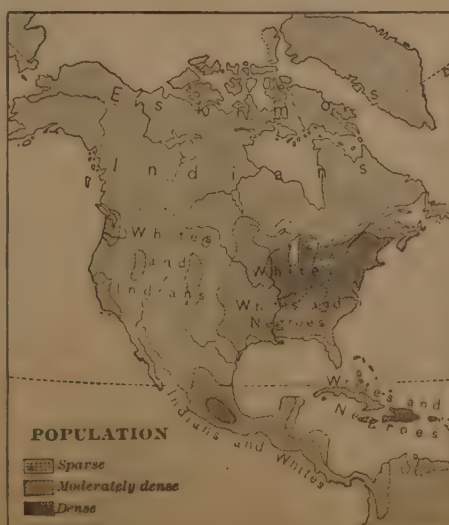
mon, such as alligators, monkeys, vampire bats, and jaguars, as well as brilliantly colored parrots and many kinds of humming birds.

Supplemental Work. Make a list of the forest trees growing in your neighborhood. Make a list of the wild and domestic animals found in your neighborhood.

PEOPLE AND COUNTRIES

People. North America as a whole is very thinly peopled. It contains less than half as many people as it would have if the population of the world were evenly distributed over all the land. By far the largest number of people in North America live between the Great Lakes and the Gulf of Mexico, and on the islands and mainland south of the Tropic of Cancer. In parts of these regions the population is dense. In nearly all the remainder of the grand division the population is sparse, especially in the north, where it is very sparse.

The population map indicates the distribution of population and, in a general way, the distribution of races. The northern part of the grand division is occupied almost exclusively by Eskimos and Indians. South of the Great Lakes and the Saskatchewan River three races are represented,—Indians, whites, and negroes; whites and negroes in the east, and whites and Indians in the west.





NORTH AMERICA

Scale 600 miles to one inch, same as the maps of South America, Eurasia, Africa, and Australia.

SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000

The reasons for this distribution of population and races are partly climatic and partly historical. If you will compare this population map with the maps of the heat belts and rainfall on p. 38, you will see that practically all regions in which the population is dense or moderately dense have an ample rainfall, and that most of them either have hot summers or are always temperate. These are the climatic conditions which adapt a region for agriculture; and it is in such regions, where farming may be carried on, that most of the white and negro races live. In the regions which are too dry or too cold for agriculture the population usually is sparse and the inhabitants are chiefly native Indians.

Map Exercise. In what direction are Greenland and Iceland from the mainland of North America? What large bodies of water border each of these islands? What country occupies most of America north of the Great Lakes? What is the region northwest of the Dominion of Canada called? What country is south of Canada? How do the United States and Canada compare in size? What country is south of the western part of the United States? What general name is given to the narrow region between Mexico and South America? Name the four largest islands of the West Indies. Which of them is nearest to the United States? Which is farthest east?

Countries. The historical reasons for the distribution of population and races are also connected with the subdivision of North America into countries. When Columbus discovered America the whole grand division was thinly inhabited by Indians, with a few Eskimos in the north. The inhabitants in the north and west were mostly savages; those in the east and southwest had reached a low stage of barbarism; but west and south of the Gulf of Mexico, where most of the Indians lived, they had advanced nearly to the lowest stage of civilization.

After Columbus, came civilized white men from Europe, who explored America, and some settled there. They were chiefly Spaniards, Frenchmen, and Englishmen. Still later the Russians came across Bering Sea and established fur-trading posts in Alaska.

The Spanish explored and made settlements in Mexico, Central America, and the West Indies. The French made settlements in the St. Lawrence valley, which they called Canada, and explored the Great Lake region and the Mississippi valley. The English established colonies along the Atlantic coast between the peninsulas of Nova Scotia and Florida, and also explored the northern part of the continent.

Several wars occurred among the French, the English, and the Spanish. In time the French gave up to the English Canada and the land they claimed east of the Mississippi River. Great Britain still owns Newfoundland and the Dominion of Canada.

In 1776 the thirteen English colonies south of Canada declared their independence, and united to form the republic of the United States. After the Revolution, Great Britain ceded to the United States the country south of Canada as far west as the Mississippi. Later, the United States acquired the region west to the Pacific, bought Alaska from Russia, annexed the Hawaiian and other

islands in the Pacific, and obtained possessions in the West Indies.

Many thousands of people from western and central Europe have come across the Atlantic Ocean to seek homes in the United States and in Canada; their descendants now far outnumber the original Indian inhabitants. The Indians have been gradually driven westward and northward into the drier and colder and less desirable parts of the grand division by the ever-advancing tide of civilized white settlers.

Not long after the United States was formed, the Spanish colonies west and south of the Gulf of Mexico secured their independence and became republics. The largest of these is Mexico, while farther south there are six smaller republics, which together make up Central America.

There were always many more Indians in Mexico and Central America than farther north, and not nearly so many white men have settled in these countries, so that now by far the greater part of the people living in Spanish North America are either Indians or people of mixed Spanish and Indian blood.

Spain once owned the West Indies, but now has no possessions there. Cuba is a republic, and there are two republics in Haiti. Porto Rico belongs to the United States; Jamaica, the Bahamas, and many of the small islands are possessions of Great Britain. France, Holland, and Denmark also own islands in the group.

When the Spaniards took possession of the West Indies they enslaved the Indians as laborers, but great numbers of them died. Then negro slaves were brought from Africa to the islands and to the United States, where they did the field work on the plantations. Slavery has long since been abolished, but the descendants of these negroes still form a large part of the population in the southern United States and in the West Indies. They are about as numerous as all the Indians in North America.

Long before Columbus was born the Norsemen, bold sea rovers from Scandinavia on the northwest coast of Europe, made settlements in Iceland and Greenland. These islands are sometimes called Danish America, for they belong to Denmark, a part of old Scandinavia.

Supplemental Work. Sketch a map of North America and indicate the various regions originally settled by different European nations.

TOPICS ON NORTH AMERICA

I. HISTORY. Of great highlands: the older; the more recent. Of man: discoveries; conquest; subdivision into countries—United States, Canada, Spanish republics; treatment of Indians; of negroes.

II. PHYSICAL DESCRIPTION. Location. Surroundings. Extent. Shape: general shape; coast outlines—peninsulas, gulfs and bays; river mouths—estuaries, deltas. Surface: highlands—western, eastern; lowlands—central, western, eastern; divides—continental, lesser; slopes—Pacific, Central, Atlantic. Climate: temperature; winds; rainfall.

III. LIFE. Vegetable: forests—northern, eastern, western, southern; plains—tundras, pasture lands, farming lands. Animal: northern; western; eastern; southern. Human: distribution; races; countries.



THE UNITED STATES

THE ATLANTIC PLAIN

The United States, the most important country of North America, occupies the central part of the grand division and extends from the Atlantic Ocean to the Pacific. It is traversed by all the great highlands and lowlands of the grand division.

In the east is the Atlantic plain, which is separated into two parts, physically distinct from each other, by the Hudson River (map, p. 42).

South of the Hudson the east half of the Atlantic plain is low, flat, and sandy. The coast is fringed with barrier beaches (§ 66), which inclose long, narrow lagoons. These lagoons are bordered with wide salt marshes. The sluggish streams have wide flood plains (§ 52), and, because the ocean tides ascend the larger streams through the width of this region, it is called the *Tidewater region*. Find this region on the map.

West of the Tidewater region the Atlantic plain rises more rapidly. The swift streams have cut wide and rather deep valleys (§ 49), leaving knolls and uplands of moderate elevation between. This is the foothill or *Piedmont region*.

The boundary between these two regions is often called the *Fall line*, because falls or rapids occur on nearly all the streams where they cross it. The larger streams are navigable from the coast to these falls, where freight must be transshipped. For this reason and also because the falls furnish water power for manufacturing, many cities and towns have grown up along the Fall line.

Long ago the seacoast was at the Fall line. The Piedmont region had been rough highland, but ages of erosion had lowered its surface, reducing it almost to a plain (§ 51), while the rock waste worn from it was deposited in nearly level layers on the sea bottom to the east of the Fall line, where it gradually hardened into rock (§ 69). Then both regions were slowly upheaved, and the newly made layers of rock became the low, flat Tidewater region. The upheaval of the Piedmont region quickened the current of its streams and enabled them to cut their present valleys, making its surface again somewhat rough and hilly. After river valleys had been worn in the Tidewater region some parts of it sank slightly, permitting the sea to extend far up the valleys to form estuaries. New York, Delaware, and Chesapeake bays were made in this way.

Northeast of the Hudson River the Atlantic plain is narrower and is mainly the Piedmont region, which extends in most places to the seacoast. Its hard rocks form bold headlands and rocky islets, between which are deep fiords (§ 28) and sheltered sounds. The whole region is covered with the remains of the old Laurentian glacier (§ 60), such as gravels, clays, huge boulders, and round-backed glacial hills. Old valleys were dammed by the glacial drift; many lakes were thus formed, and the streams, turned from their old courses, have cut new channels in the hard rocks. These channels are not yet worn down to uniform slopes; therefore the streams abound in falls and rapids.



MOUNT WASHINGTON, NEW HAMPSHIRE.

Long Island and the smaller islands east of it, as well as the peninsula of Cape Cod, are largely composed of the clays and gravels heaped up in the terminal moraine (§ 59) along the melting end of this old glacier.

TOPICS ON THE ATLANTIC PLAIN

I. NORTHERN PART. Width. Surface: hills; lakes; soil. Coast: indentations; projections; islands.

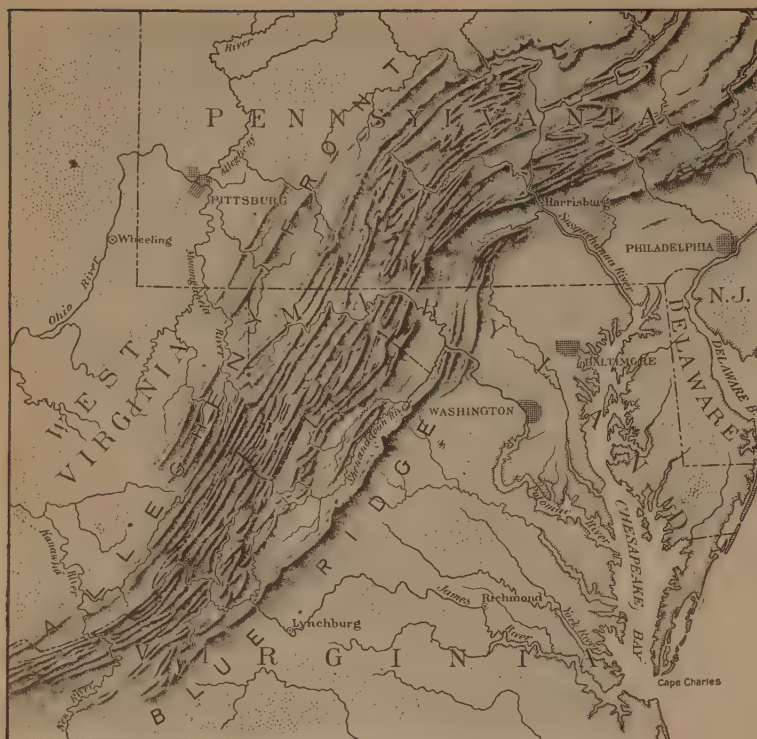
II. SOUTHERN PART. Western region: surface; drainage; formation; name. Eastern region: surface; coast — borders, indentations; drainage; formation; name. Fall line: reason for; formation; value.

THE APPALACHIAN MOUNTAINS

West of the Atlantic plain are the Appalachian Mountains (map, p. 42). These mountains are cut entirely across by the low valley which contains the Hudson River, flowing to New York Bay, and Lake Champlain, draining to the St. Lawrence River.

Northeast of this valley the mountains include a practically continuous range, which extends into Canada nearly to the Gulf of St. Lawrence (maps, pp. 42, 54). Its crest is worn into a succession of peaks and wide depressions. To the east of this range is another, less continuous, line of heights, which rises in Mount Washington to an altitude of over a mile, the greatest elevation of the northern Appalachians.

West of Lake Champlain is a low plateau from which rise the short but rugged ridges of the Adirondack Mountains.



THE NORTHERN PART OF THE APPALACHIAN RIDGE AND VALLEY BELT.

Southwest of the Hudson valley the eastern half of the Appalachian region consists of long, narrow mountain ridges, nearly parallel to one another, and separated by wide valleys. This part of the region is called the *Appalachian ridge and valley belt*. The ridges are about half a mile high, usually with smooth and even summits, but Blue Ridge, the most eastern range, has many peaks and is higher in the south. Mount Mitchell is over a mile high. The valley just west of Blue Ridge, called the "Great Valley," extends southwest from the Hudson to the Alabama River.

The western half of the Appalachian region is a broad upland, about as high as the Appalachian ridges. The streams have worn deep, narrow valleys into its surface, thus cutting it into a number of detached plateaus, called the *Allegheny plateaus*.

Trace the divide of the Atlantic slope southwestward from the source of the Hudson. It will be seen that in the north the larger streams rise west of the ridge and valley belt and flow southeast to the Atlantic, crossing the mountain ridges one after another in *water gaps*. In the south, on the contrary, the larger streams such as the Kanawha and the Tennessee rise in the eastern ridge and flow into the Ohio to the northwest. They have cut deep gorges through the whole width of the plateau to reach that river. These gorges and water gaps are of great use to commerce by affording low routes across the mountains.

Ages ago the rock layers of the eastern half of what is now the Appalachian region were upheaved into many long folds or waves (§ 31). Most of the rock layers are soft, but some of them are very hard. The erosion of ages carried away the tops of the folds (§ 32), exposing the edges of the layers, and reduced the region to a nearly flat lowland (§ 51). Then this region was again upheaved, but so slowly that the larger streams flowing across it to the sea could cut their channels across

the hard layers as fast as the region rose. The branches of the larger streams, from the right and left, rapidly eroded the soft layers as the region rose, forming the long Appalachian valleys, while the hard layers in the sides of the old folds were eroded more slowly, and were thus left projecting as the parallel, even-topped Appalachian ridges (§ 32, diagram).

In the western half of the Appalachian region the rock layers are nearly level. The surface is now composed of a hard and thick layer, which weathers very slowly, and as it rose was cut through only by the narrow valleys of the larger streams; so that this region now remains as the rough upland called the Allegheny plateaus.

The northern part of the Appalachian region was once so deeply covered by the Laurentian glacier that only the highest mountain peaks projected above the ice. The glacier widened many of the valleys, rounded and softened the mountain outlines, and left that part of the region covered with drift.

TOPICS ON THE APPALACHIAN MOUNTAINS

I. NORTHERN PART. Valleys: formation; drainage—lakes, rivers, falls. Mountains: shape; position.

II. SOUTHERN PART. Western region: height; surface. Eastern region: ridges—formation, height, shape, direction; valleys—shape, formation, chief one. Drainage: northern; southern; use of river valleys.

THE CENTRAL LOWLAND

What river system drains most of the Central Lowland in the United States? (map, p. 42). What is the largest eastern tributary of the Mississippi? Name the three largest western tributaries. What is the largest system of the Gulf slope, after the Mississippi? Name several other streams of the Gulf slope west of the Mississippi system; several east of that system.

From the Allegheny plateaus the Central Lowland slopes gently downward to the Mississippi River, where a gradual ascending slope begins, extending to the foot of the Rocky Mountains, at an elevation of over a mile.

In the main the surface of this vast region is broken only by the "bluffs," or hillsides which border the broad flood plains.

North of the terminal moraine of low, gravelly hills (map, p. 42), the country is thickly covered with glacial drift and contains thousands of lakes. This region is called the *Lake plains*.

There is also a drift-covered region south of the moraine, in which most of the glacial lakes have been



DELAWARE WATER GAP.

drained or filled with sediment. The uplands of this region, and of the country to the south and west, were grassy prairies when first visited by white men. This region is called the *Prairie plains*.

Between two lines drawn from the mouth of the Ohio, southeast and southwest, most of the Central Lowland slopes directly to the Gulf of Mexico. This region is called the *Gulf plain*. Toward the coast it is much like the Tidewater region. Through the center the mighty Mississippi meanders in a great flood plain from twenty-five to seventy miles wide (§§ 52-54).

This flood plain is one of the most fertile regions in the world, and contains many farms or plantations. As it is lower than high water in the river, embankments, or *levees*, have been built along the river banks to prevent overflows. During high water a break, or *crevasse*, sometimes occurs, and then the country far and wide is covered with water. At its mouth the river has formed a great delta (§ 57), which projects far into the Gulf beyond the even curve of its shore line.

The most rugged part of the Central Lowland is the Ozark Mountains. The Arkansas River divides these mountains into two parts. North of the river the land consists of rugged plateaus. South of it, the rocks have been folded and eroded into ranges of hills and low mountains, somewhat like the Appalachians.



A LEVEE ON THE LOWER MISSISSIPPI RIVER.

TOPICS ON THE CENTRAL LOWLAND

- I. SLOPES. Eastern. Western. Northern. Southern.
- II. RIVERS. Chief : basin ; divides ; branches ; banks ; mouth. Other rivers.
- III. REGIONS. Lake plains : southern boundary ; surface ; covering. Prairie plains : limits ; covering. Gulf plain : drainage ; covering ; coast. Mountains : position ; northern part ; southern part.

THE ROCKY MOUNTAIN HIGHLAND

From the map, p. 42, trace across the United States the boundary between the Central Lowland and the Rocky Mountain highland. Compare by measurement along the 40th parallel the distances from this boundary to the Atlantic and to the Pacific coast.

Near the center of the United States the Central Lowland merges into the highland which covers most of the western half of the country. This vast Rocky Mountain highland may be roughly divided into four



THE PRAIRIE PLAINS, EASTERN KANSAS.

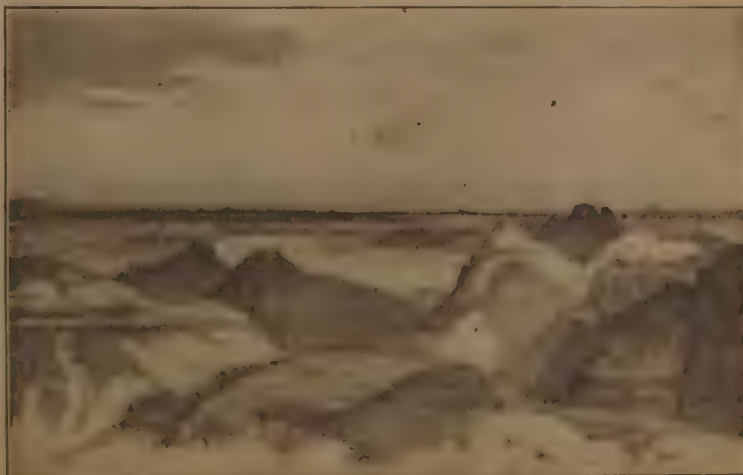
sections extending in a general north and south direction across the country: (1) the Great Plains on the east, (2) the high ranges of the Rocky Mountain chain, (3) the great plateau and basin region, and (4) the high Sierra Nevada and Cascade ranges along the western border of the highland.

As the prevailing winds from the Pacific lose most of their moisture on the west slopes of the Sierra Nevada and Cascade ranges, the highland region in general is dry, and in some parts is a desert (§ 91). The larger streams of this region are maintained by the rains and melting snow of the mountain ranges. Many of the smaller streams flow only after the occasional brief and heavy rains, or "cloud-bursts."

The *Great Plains* in general appear nearly level. Really their surface is a gradual slope upward from the Central Lowland to the base of the Rocky Mountains.

The larger streams flowing across the Great Plains are kept so choked with the sand brought in by their tributaries, that the valleys are widened faster than they are deepened, and are therefore generally broad and shallow. In some places toward the north, however, the soft rock has been worn into a maze of deep gullies, forming the "*Bad Lands*."

The *Rocky Mountains* border the Great Plains on the west. The surface at the base of these mountains is nearly $1\frac{1}{4}$ miles high; the ranges themselves rise between one and two miles higher. The lower slopes



"BAD LANDS," SOUTH DAKOTA.



ROCKY MOUNTAINS, MONTANA.

are forest-clad; the jagged crests are bare rocks except when covered with snow.

From South Pass (see map, p. 42) northward the ranges are irregular in direction. Some are the remnants of rock folds, some are upheaved and tilted blocks of rock, and others are formed of old lava outflows (§ 33). South of the pass the ranges are more nearly parallel. As a rule, each range is a single broad rock fold, from which the top layers have been worn away, thus exposing the hard granite rock which now forms the higher, central part of the range. Between the ranges are wide, grass-carpeted valleys, or "parks."

The *plateau region* west of the Rocky Mountains, when upheaved, was broken into great blocks, many miles in length. Some of them were lifted higher than others, forming higher plateaus separated from the lower plateau surface by lines of cliffs. Other blocks were tilted so that the upturned edges form ranges of mountains. In this region, too, the streams have cut the deepest canyons in the world. Thus the surface of the plateau region is very uneven.



ILLUSTRATING THE TILTED BLOCK STRUCTURE OF THE PLATEAU REGION.

After the upheaval of the *Columbia plateaus*, lava, forcing its way up through the fissures, spread over the surface (§ 33): Repeated outflows, meeting and overlapping, covered nearly the whole region with lava to a great depth, completely burying many of the upheaved and tilted rocks. Into this vast lava plateau Snake River has cut a narrow canyon which is in some places three fourths of a mile deep.

The *Colorado plateau* region is divided into many plateaus, some high, some low, separated by long lines of cliffs along the sides of the upheaved blocks. The region is remarkable for the deep, narrow canyons cut by the streams. These streams have been flowing in their present channels throughout much of the period of upheaval, and have deepened their channels about as fast as the surrounding country rose, and much faster than weathering could widen the valleys in that dry region (§ 50). Hence the channels have become narrow and impassable canyons, in some places over a mile deep.

The *Great Basin* lies between the Wasatch Mountains and the Sierra Nevada, and extends south to the Gulf of California. It is the driest part of the United States, and has few permanent streams. The uptilted

edges of the blocks in this region have been eroded into numerous low mountain ranges. Between these are broad, level plains formed of the rock waste from the mountains. During the season of rainfall, shallow lakes form in many of these valleys; but during the dry season they evaporate, leaving their beds incrustated with salt.

About the time that the Laurentian glacier covered the eastern part of North America (§ 60), extensive lakes covered much of the Great Basin. Gradually the climate became drier, and the lakes became smaller. Great Salt Lake and a few smaller lakes are remnants of these old inland seas. Around the edges of the basin are now found several nearly level terraces which mark different heights of these old great lakes as evaporation gradually lowered their surface.



OLD LAKE TERRACES, UTAH.

The *Sierra Nevada and Cascade Mountains* are from one to two miles higher than the general surface of the plateau.

The Sierra Nevada is an enormous block of rock up-tilted along its eastern edge, so that its surface slopes to the west. The dry eastern side is short and steep. The streams upon the long, well-watered western slope have cut deep canyons, leaving a succession of long mountain spurs between.

There were outflows of lava in the Sierra Nevada, but in the Cascade Mountains the outflows were so great that the tilted blocks generally are buried, and the mountains seem to be composed entirely of lava. All the principal peaks are volcanoes, some of which are probably not yet extinct. Mount Rainier, the highest, is nearly three miles high, and several of the others are high enough to be always capped with snow.

TOPICS ON THE ROCKY MOUNTAIN HIGHLAND

I. PLAINS AND PLATEAUS. Eastern: surface; river valleys—south, north. Western: northern part—formation, valley; central part—limits, surface, drainage; southern part—surface, valleys, formation.

II. MOUNTAINS. Eastern: northern part—appearance, formation; southern part—ranges, valleys. Western: southern range—formation, slopes, streams; northern range—formation, peaks.

III. CLIMATE. Regions: western; eastern; mountain ranges; Great Basin; lakes. Effect: on surface; on vegetation.

THE PACIFIC COAST REGION

What low mountains closely border the Pacific coast? What mountainous island lies at the northern end of these ranges? By what strait is it separated from them?

The narrow Pacific coast region consists of a series of low mountains which rise abruptly from the coast, and a series of broad lowland valleys which separate the coast ranges from the Sierra Nevada and the Cascade Mountains.

The *Coast Ranges* are the remains of wide rock folds. While they were being elevated they were a chain of mountainous islands, like Vancouver Island, or high peninsulas, like Lower California, and like them were bordered on the east by long narrow gulfs or sounds.

Continued elevation has brought the bottoms of these gulfs slightly above the level of the sea, forming the great *lowland valleys* of the region.

These valleys have been rendered very fertile by the fine rock waste washed into them from the bordering mountains. The California valley drains into the ocean through San Francisco Bay, which was once a strait like the present Strait of Juan de Fuca. In the north the valley is still occupied by the island-studded arm of the sea called Puget Sound.

In comparison with the Appalachians, the western highlands are very young; the mountains are among the youngest in the world. Their upheaval has occupied thousands of years, but is not yet completed. The region is still subject to earthquakes, caused by slight movements of the great blocks into which the region is broken, and some of its volcanoes still show occasional signs of activity.

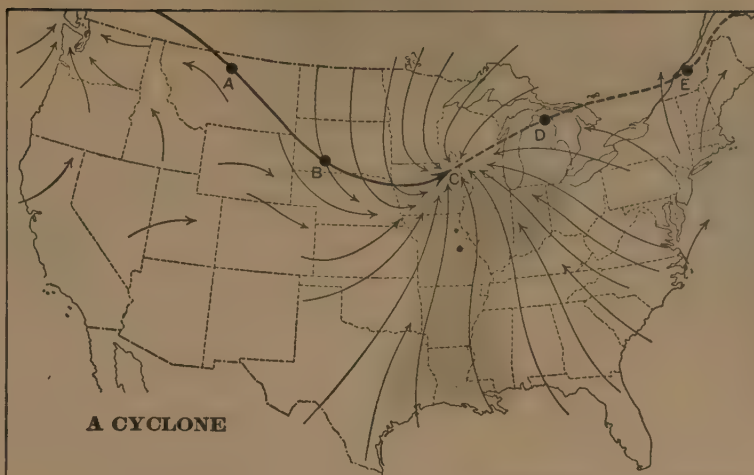
TOPICS ON THE PACIFIC COAST REGION

I. RANGES. Position. Extent. Height. Formation.

II. VALLEYS. Formation. Divisions. Drainage. Soil.

CLIMATE

The United States lies chiefly in the warmer part of the temperate zone. In summer most of the country is within the hot belt, but in winter a large part of it lies within the cold belt (§ 82), as shown on this chart (see



also p. 38). As regards summer and winter temperature, there are four climatic belts or regions in the United States, as represented on the chart.

The difference in temperature between the northern and the southern part of the country is much greater in winter than in summer—the northern winters being much longer and colder than those in the south.

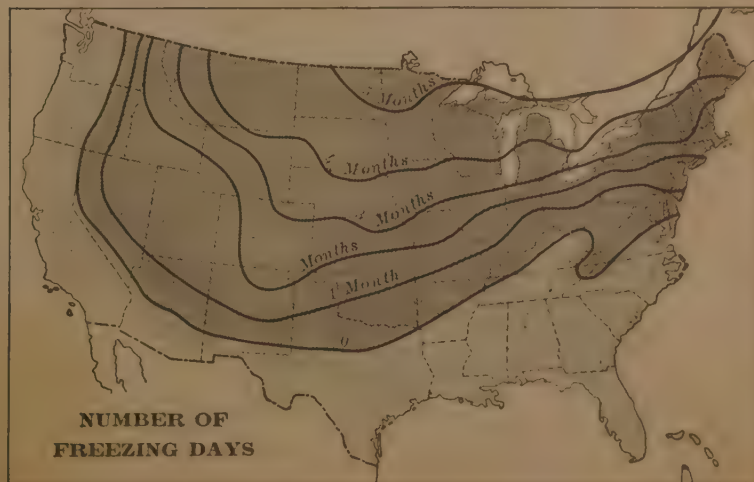
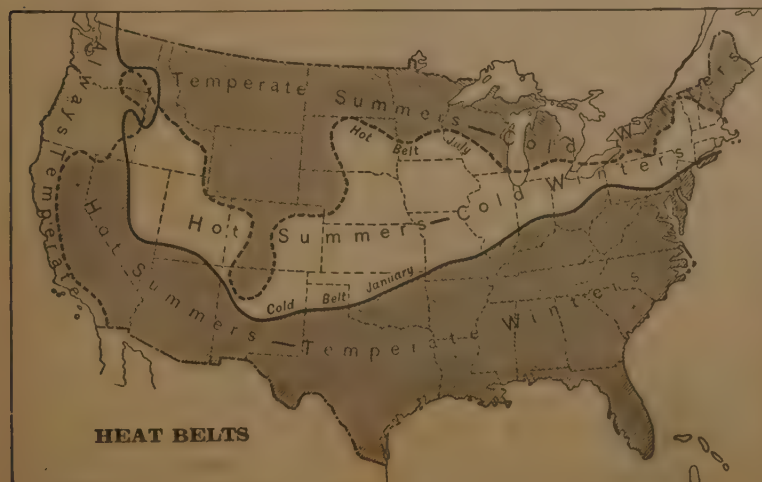
In the right-hand chart below, the dotted region has no day in the year whose average temperature is below freezing. The number of freezing days in a year increases northwardly over the region shown by the shaded portion of the chart, the first line showing where there are thirty days of freezing weather, the second line sixty days, and so on.

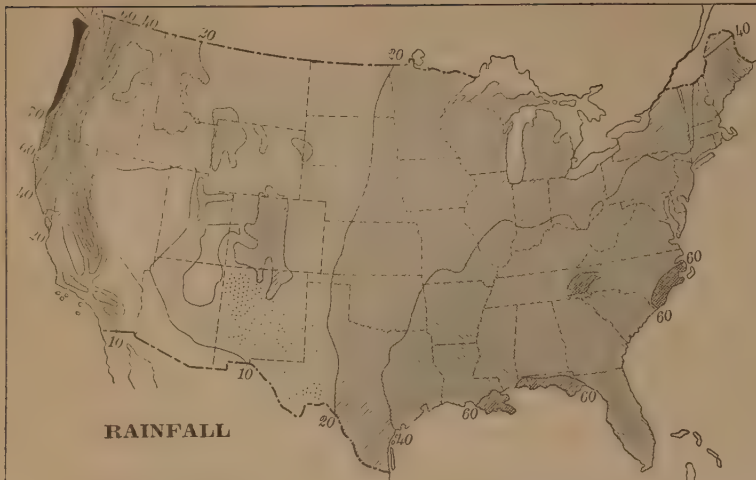
East of the Rocky Mountains, especially in the north, the weather is subject to rapid changes at all seasons. These are caused by the cyclonic storms (§ 86) which are always drifting eastward over the country.

A cyclonic storm is illustrated by the chart at the top of the page. The point of the heavy arrow lies in a storm center, around and into which the winds are whirling, as shown by the light arrows. East of the center the winds come from the south and southeast and make the weather warm. West of the center the winds come from northward and make the weather cool.

But the storm center is moving all the time. Twenty-four hours before it reached C it was at B; and a day's drifting from C will *probably* carry it to the neighborhood of D. Thus, as the storm drifts rapidly eastward over the country, it carries warmer weather in front of it, and is followed by colder weather.

In the eastern half of the country the southerly winds in front of the cyclone are vapor-laden when they leave the Gulf of Mexico, but are chilled as they advance northward; hence cloudy, rainy, or snowy weather sweeps over the country in front of the cyclone. When



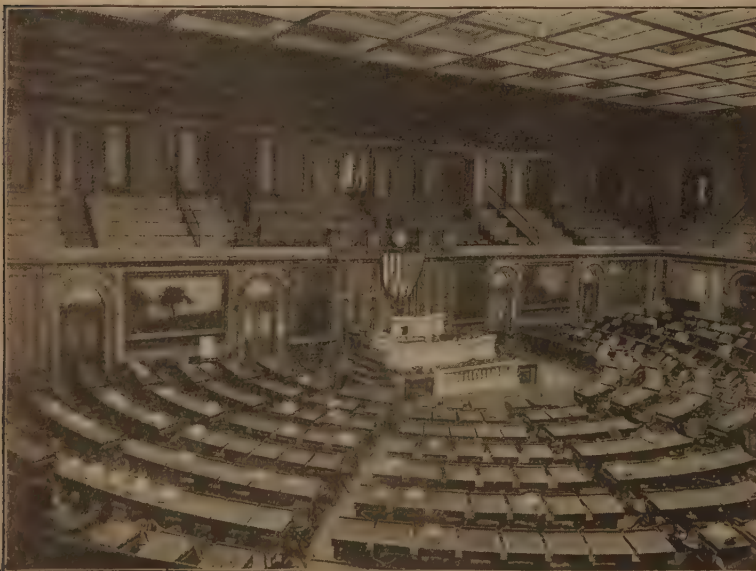


the storm center is far west of the Gulf, however, the southerly winds in front of it come from dry highlands and give but little rain to the western half of the United States. The winds on the western side of the storm center grow warmer as they advance southward, and hence (§ 89) bring clear, dry weather.

In the chart above, the regions shaded by lines would each year be covered more than twenty inches deep by the rainfall, if the water remained where it fell. This amount is ample for almost all kinds of farming. In the parts of the United States shown by dots, or left unshaded, the rainfall is less than twenty inches, and as a rule irrigation is necessary for farming. Explain why the Pacific coast region has a heavier rainfall (p. 46).

Cyclones follow one another so rapidly that there are almost always one or more storm centers in the United States. The observers of the United States Weather Bureau take daily observations of the weather in different parts of the country, by which they are able to locate the existing storm centers, and by judging in what direction, and how far, the cyclone, with its warm wave, cold wave, and rain and cloud regions, will advance during the next twenty-four hours, they are able to determine the "weather probabilities" for the following day.

Supplemental Work. Read chapter 11, on Weather and Weather Predictions, in Waldo's "Elementary Meteorology."



HOUSE OF REPRESENTATIVES, WASHINGTON, D.C.

GOVERNMENT

When the thirteen English colonies became independent (p. 41), each formed a *state government*, which deals with local matters only. But the thirteen states united to form a single republic (§ 125) under a *Federal government*, which deals with matters of interest to more than one state.

The land between the Appalachian Mountains and the Mississippi River was then unsettled. Most of it was given up to the Federal government, and, with most of the region afterward acquired by the United States west of the Mississippi River, was known as *public land*. The Federal government divided this public land into great tracts called *territories*. When enough people had settled in a territory, it was admitted to the Union as a state. There are now forty-eight states in the main body of the country, besides the two outlying territories of Alaska and Hawaii and other dependencies.

The **Federal Government** has three great branches. These are (1) a law-making, or *legislative*, branch, called *Congress*, to which each state sends one or more representatives and two senators, chosen directly or indirectly by the people of the state; (2) a law-enforcing, or *executive*, branch, at the head of which is the *President*, who is elected every four years; (3) a law-explaining, or *judicial*, branch, consisting of *Federal courts* presided over by judges who are appointed for life.

Congress meets, the Supreme Court has its sessions, and the President lives in Washington city, which is therefore the capital of the United States. Congress and the Supreme Court meet in the Capitol. The residence of the President is called the White House.

The executive branch of the government is divided into nine great departments, the heads of which are the President's chief advisers, and form his *Cabinet*. The Secretary of State has charge of our foreign ministers and consuls and all the government's business with foreign countries. The Secretary of the Treasury controls the collection, payment, and coinage of money for the government. The Secretaries of



WHITE HOUSE, WASHINGTON, D.C.



CAPITOL AT WASHINGTON.

War and the Navy control the army and the navy. The Attorney-General is the government's chief lawyer. The Postmaster-General controls the post offices of the country, the carrying of the mails, and the manufacture and sale of postage stamps. The Secretary of the Interior has charge of the surveying and sale of the public lands, of pensions, of patents, and of Indian affairs. The Secretary of Agriculture has charge of the Weather Bureau, and collects and publishes information about the crops, domestic animals, and forests, and the conditions favorable or unfavorable to them. The Secretary of Commerce and Labor collects and publishes information about fisheries, mines, manufacture, commerce, and labor, and has charge of the lighthouses.

The State Governments are similar to the Federal government. Each has a law-making branch, usually called a *legislature*, composed of senators and representatives; a law-enforcing branch, composed of a *governor* and his assistants; and a law-explaining branch, consisting of the *state courts*, presided over by judges. These officers are generally elected by the people of the state, though in some states the judges are appointed.

The Territories and Dependencies are controlled by Congress. The people of a territory may be allowed to elect their own legislature, but the governor and judges and other officers are appointed by the President, and Congress may set aside laws made by the territorial legislature. Each territory sends to Congress a delegate who may speak, but has no vote.

Supplemental Work. Count the number of stripes and of stars in our flag. What do they represent? Find the names of the present President and his Cabinet. Read chapters 2, 3, 4, and 5, "Carpenter's Geographical Reader, North America."

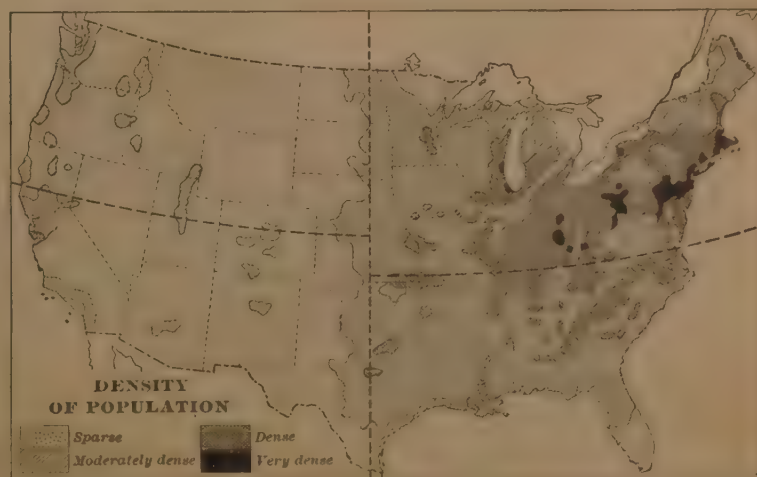
POPULATION AND PROGRESS

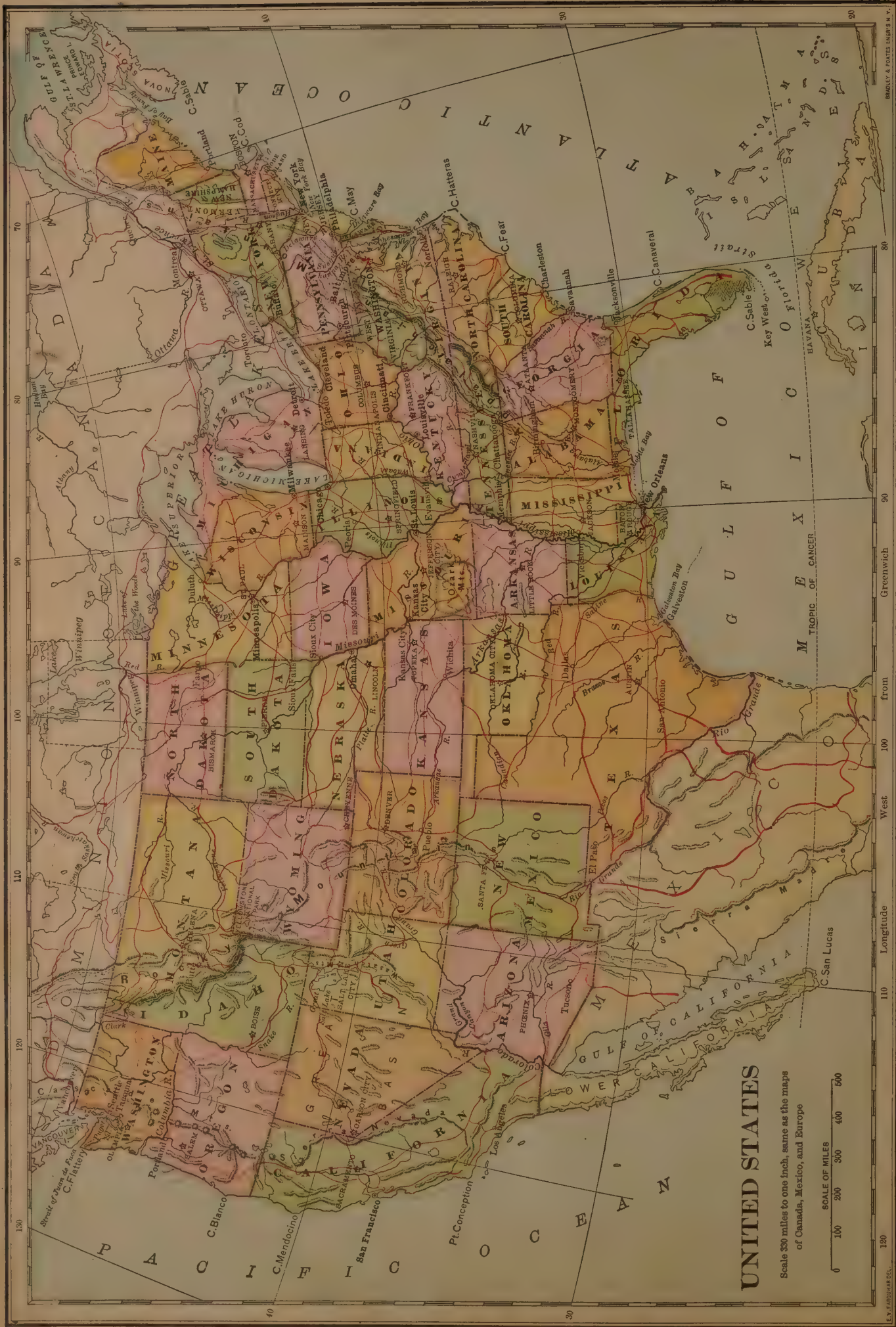
Population. On this population map the United States has been roughly divided into quarters by heavy broken lines. It will be seen that the northeastern quarter is more densely peopled than the southeastern,

and that the two eastern quarters have a denser population than the two western quarters with their drier climate (pp. 41, 48). The eastern half of the United States contains about nine tenths of the people in the country.

At the end of the Revolutionary War there were about four million people in the United States, mostly near the Atlantic coast. Now the population is more than twenty times as great and has spread over nearly the whole country. This represents a greater increase and more rapid spread of population than has ever been known before in the history of the world. Millions of people, attracted by the cheap and fertile lands and the great opportunities under a free government, have left their homes in Europe to settle in the United States, and thousands of others are coming every year.

People have come from all countries, but mostly from Great Britain, Ireland, Germany, Italy, and the Scandinavian countries. Whatever their nationality, however, they soon adopt our language, manners, and customs, and become thorough *Americans*.

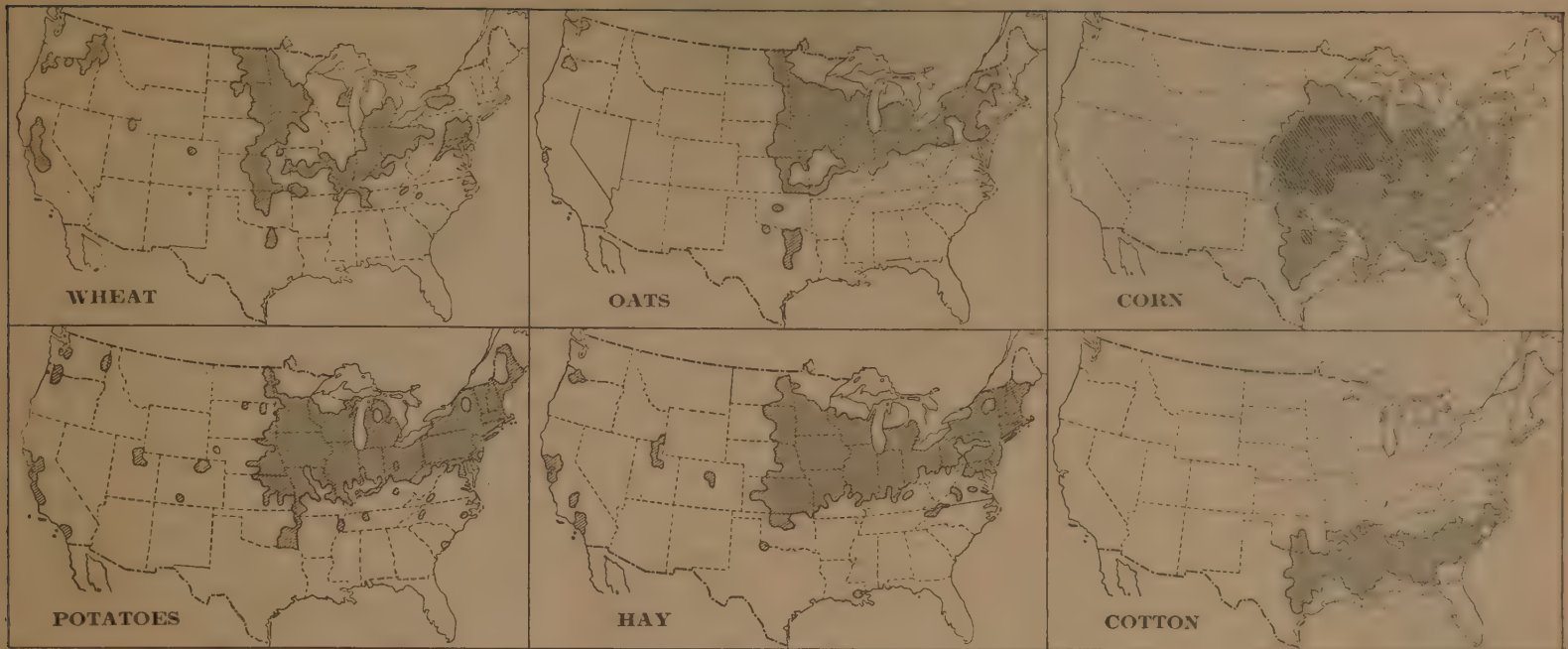




Map Exercise. Name and locate six states lying entirely east of the Hudson River. Name and locate seven states bordered by the Hudson River and Chesapeake Bay which are bordered by the Atlantic or crossed by the Appalachian Mountains. Name and locate six states between these and the Mississippi River. Which of them border on the

Great Lakes? Which of them border on the Ohio River? Name and locate seven northern states between the Mississippi River and the Great Plains. Name and locate seven southern states lying entirely east of the Mississippi River. Which of them border on the Atlantic? Which border on the Gulf of Mexico? Which of the southern states have no

coast? Name and locate four southern states between the Mississippi River and the Great Plains. Name and locate four states which are crossed by the Rocky Mountains. Name and locate four states lying on the great plateaus west of the Rocky Mountains. Name and locate three states which border on the Pacific Ocean.



Most of the immigrants have landed in the northeast, and moved inland, seeking work and homes. Hence the northeastern quarter of the country is most densely settled, and has the largest foreign population.

In the southeastern quarter there are not many foreigners, but there are about as many negroes in that region as there are foreigners farther north.

In the thinly settled region of the west there are some Indians, but there are many more whites than Indians.

On the Pacific coast there is a large foreign population, mainly Europeans, but about one eighth of the foreigners are Chinese.

Progress. Although the United States is one of the youngest of nations, it is one of the greatest. It has an enormous territory, and a highly civilized and energetic people, all speaking the same language.

Industries of all kinds have increased in this country even more rapidly than the population. Not only is the total product of *all* the seven chief industries pursued by man (§ 127) greater in this country than in any other, but the product of *each* of these industries is greater than in any other nation.

Many articles are produced in such large quantities that there is sufficient to supply the wants of the great population and to leave a surplus for export to other countries where the article is needed. Thus the people of nearly every country in the world have come to rely upon the workmen of the United States for some of the necessities of life.

Supplemental Work. Read chapters 1, 4, and 15 in "Children's Stories of American Progress," by Henrietta Christian Wright.

Before taking the following lessons devote several days to the study of the map on the opposite page, until you can name or locate without hesitation any state on the little production maps above.

PRODUCTION

Agriculture is confined mainly to the eastern half of the country and to the Pacific coast region, where

the annual rainfall exceeds twenty inches (p. 48). More of our people are engaged in farming than in any other occupation. Corn, hay, cotton, wheat, oats, and potatoes are the principal crops, and they comprise more than three fourths of the value of all the agricultural productions.

Practically all the cotton is produced in the southeastern quarter of the country, but the other five great crops are produced chiefly in the northeastern quarter, as shown on the production maps above.



Corn is much the largest and most valuable crop. It is chiefly fed to live stock, though great quantities are used for human food, and for distilling into spirits. Corn is the only great crop that is widely grown both north and south, but the chief corn belt lies in the northern Mississippi valley. The diagram shows the proportion of the world's corn crop raised in the United States.

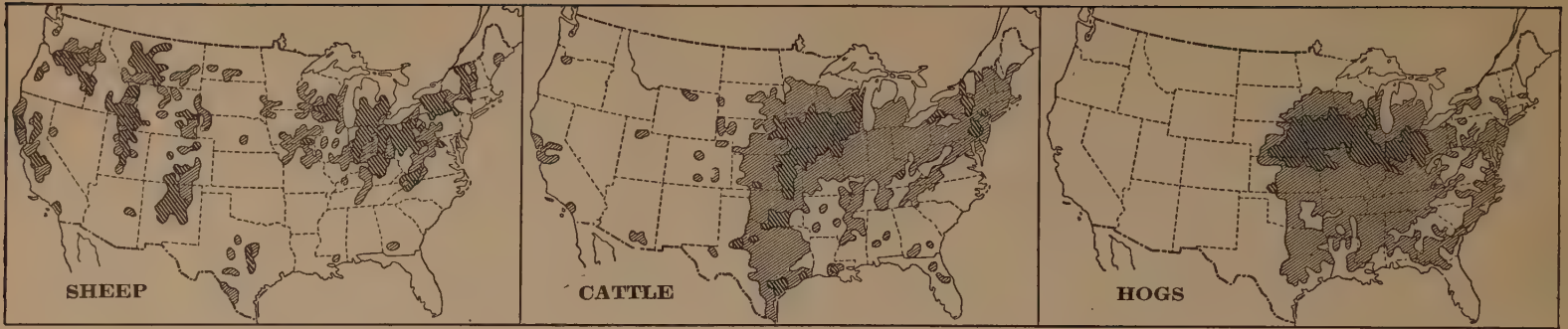
Wheat, used chiefly as food for man, is one of our most important crops. It does not require as hot summers as corn, and hence thrives farther north. The diagram shows the proportion of the world's wheat crop raised in this country.



Cotton is a peculiarly important crop. More cloth is made from cotton than from any other material, and the bulk of the world's cotton supply comes from the United States (see diagram).



The minor agricultural products of the United States are very numerous, and many of them are quite important, as fruits, vegetables, tobacco, barley, rice, sugar cane, and sugar beets.



Herding. Nearly half of the hogs and about one fourth of the cattle in the world are raised in the United States. From them is obtained so large a surplus of pork and beef that, after cotton, meat is our greatest export. Horses and sheep are raised in great numbers, but scarcely in excess of our own wants.



UNITED STATES - REST OF WORLD

THE WORLD'S PRODUCT OF CATTLE AND HOGS.

As shown on the maps above, the distribution of hogs conforms closely to the corn region, while the area of cattle conforms more nearly to the hay region, with a broad southwestward extension over the grassy plains of Texas to the Gulf coast.

Most of the horses are raised in the oat-producing region, though some localities not in this region are noted for horse-breeding.

Sheep, while used for mutton, are chiefly valuable for their yield of wool. Fleeces grow thickest in a rather cool climate, hence the great sheep ranges are in the northern part of the eastern lowland, in the western highlands, and on the Pacific coast.

Fishing. The fish product of the United States is more valuable than that of any other nation. The diagram shows the proportion of the world's catch obtained by our fishermen. Oysters and codfish from the northeast coast and salmon from the northwest coast are the most important products.



U.S. - REST OF WORLD

FISHERIES OF THE WORLD.

Lumbering. Fully one third of the timber cut in the world each year comes from the forests of the United States. Lumber, in the shape of logs, beams, boards, and shingles, forms one of our important exports. The map shows the regions which contain the most continuous forest areas. The densest forests are those near the Pacific coast.

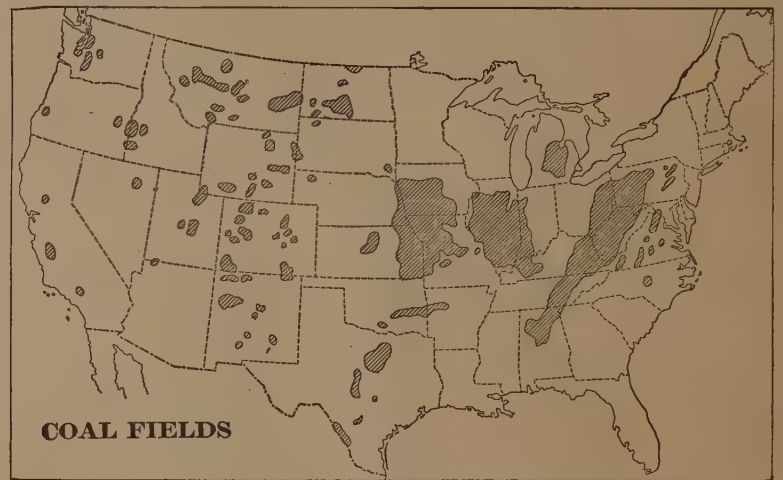


U.S. - REST OF WORLD

LUMBERING OF THE WORLD.

Mining. The mines of the United States are among its most valuable resources, and yield about one third of

the mineral product of the world. By far the most valuable of the mineral productions are coal and iron; then follow in value petroleum, copper, gold, and silver. The yield of each of these is enormous. The petroleum and copper amount to more than half of the world's supply, and these two minerals, together with coal, are important articles of export.



COAL FIELDS

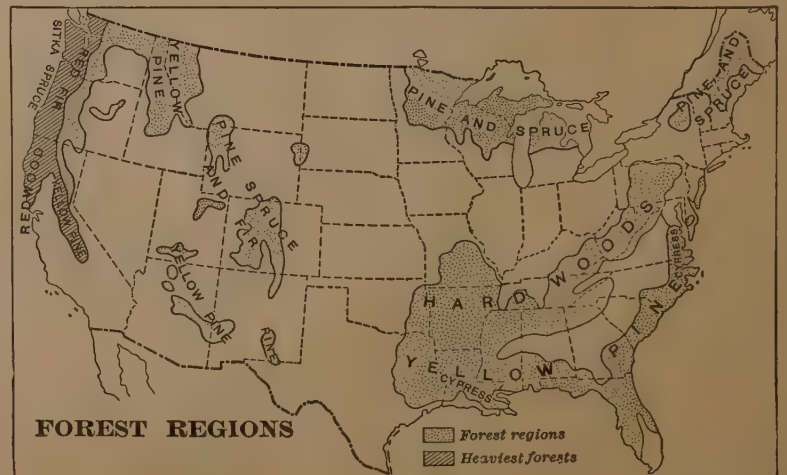
Coal is mined mostly in three extensive fields in the eastern half of the country. Three fourths of our coal comes from the large eastern field and the small detached fields northeast of it; most of the remainder comes from the large middle and western fields.



U.S. - REST OF WORLD

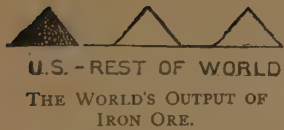
THE WORLD'S OUTPUT OF COAL.

Iron ore is found in nearly every state, but about two thirds of our product is mined near the south and west



FOREST REGIONS

Forest regions
Heaviest forests



shores of Lake Superior, and most of the rest is mined in the worn-down rock folds of the Appalachian ridges.

Petroleum is widely distributed, but the chief sources of supply occur (1) near the northwestern part of the great eastern coal field; (2) near the western edge of the large western coal field; (3) near the Gulf of Mexico; and (4) in the extreme southwest.

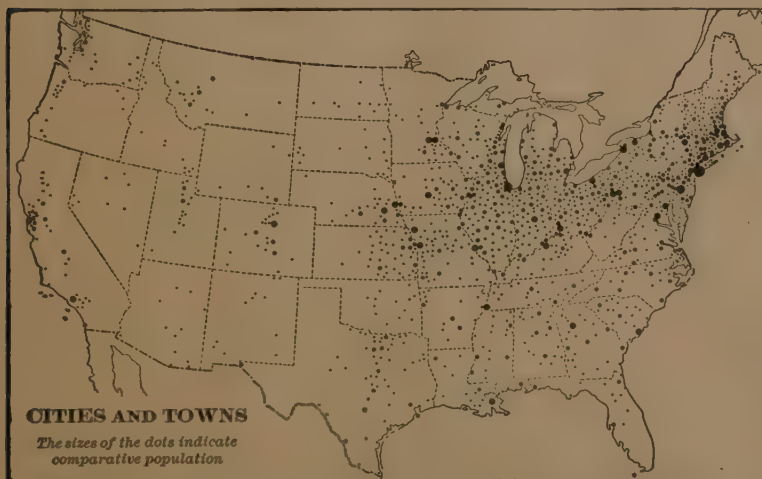
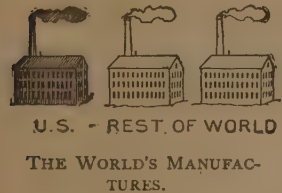
Gold and *silver* are mined chiefly in the Rocky Mountains and the Sierra Nevada, while by far the greater part of the *copper* comes from near the south shore of Lake Superior, near the source of the Missouri River, and the southern part of the Rocky Mountain highland.



MANUFACTURING AND COMMERCE

Manufacturing. The United States is the greatest manufacturing country in the world. Nearly every kind of article wanted by civilized man is manufactured in our country, and nearly always more cheaply here than anywhere else. The greatest manufactures are iron and steel goods, packed meats, cloth and clothing, lumber, flour and corn meal, liquors, shoes and leather goods.

Manufacturing is carried on chiefly in cities and towns. On this map the cities and towns of the United States



are shown by dots, the larger dots standing for the larger manufacturing centers. About nine tenths of the manufacturing is done in the northeastern quarter of the country. In the extreme northeast, where the towns are very numerous, this industry is particularly active.

In the northeast, cloth, boots and shoes, clothing, fine machinery, books and paper, are leading products. West of the Appalachian Mountains lie the great coal fields, while the greatest iron ore beds lie near Lake Superior. To smelt the iron from the ore, much fuel is necessary, and as the ore can be transported cheaply by water,

the regions where the great coal fields approach the Great Lakes have become the most important centers of the iron and steel industry. Meat packing and the manufacture of flour, liquors made from grain, and lumber are also carried on chiefly west of the Appalachian Mountains, in the region where the raw material is produced.

Commerce. The collection of raw materials from the various parts of the United States at the points of manufacture or export, the distribution of the manufactured products, and the importation and distribution of goods not produced in the country give rise to a commerce greater than that of any two other nations in the world.

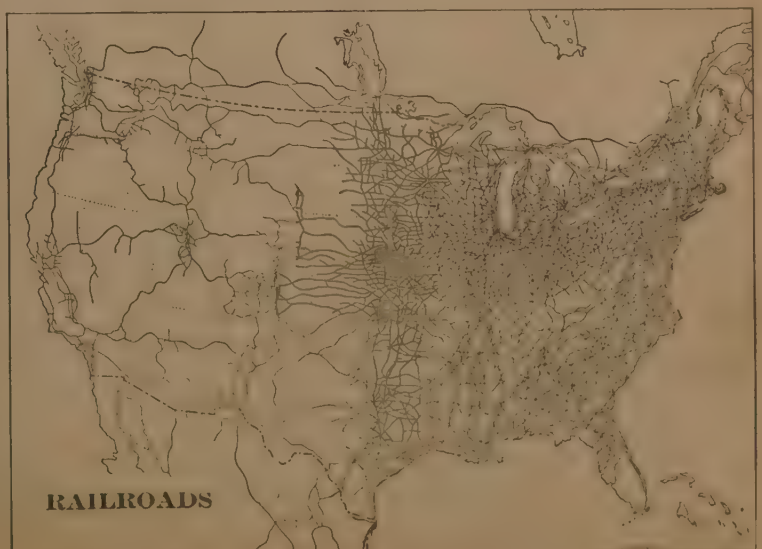


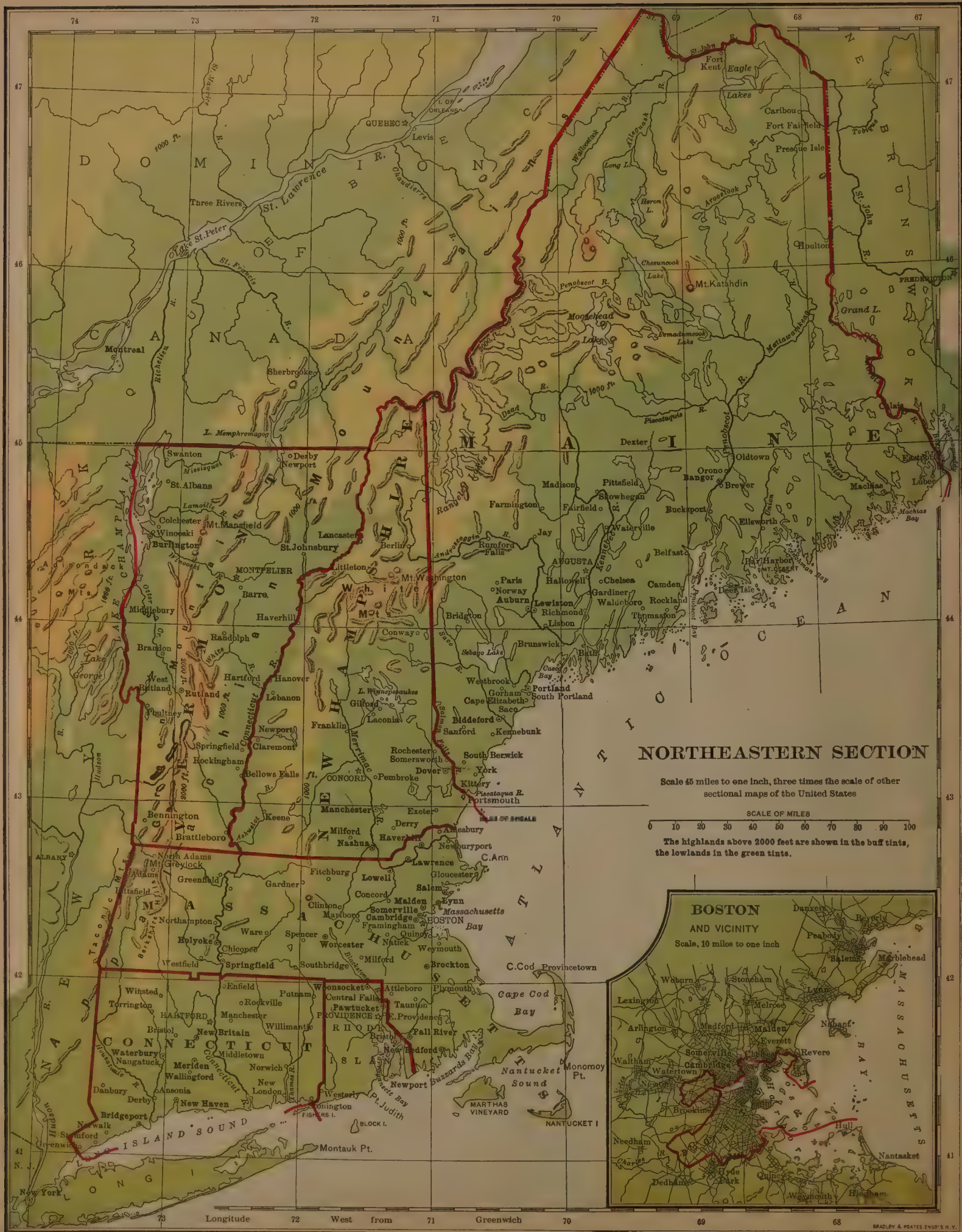
Although our *foreign* commerce is exceeded by that of only one or two other countries, it forms but one tenth of our *total* commerce. Considerably more than half of our exports consist of raw cotton, meat and breadstuffs, iron and steel manufactures, and kerosene.

Our chief imports are raw fibers (silk, wool, etc.), cloth, sugar, and coffee. Among other imports are drugs and chemicals, hides, and India rubber.

Fully three fourths of the merchandise which enters into the commerce of this country is transported by railroad, and but one fourth by boats on the oceans and lakes which border the country, or on the rivers and canals which traverse it. Nearly half of the world's length of railroad is in the United States. How does the distribution of railroads compare with the distribution of population? (map, p. 49.) Commerce is greatest in the quarter of the country where there are most railroads and the densest population.

Supplemental Work. Read chapters 5, 10, and 12 in Wright's "Children's Stories of American Progress." Read sections 280 to 286 and chapter 22 of McMaster's "School History of the United States."





COMMERCIAL AND INDUSTRIAL SUBDIVISIONS

Review the lesson on longitude and study the supplemental work (p. 7). In about what longitude is Philadelphia in Pennsylvania? (See map below.) New Orleans in Louisiana? Denver in Colorado? Santa Barbara on the Pacific coast? When it is noon at Philadelphia what time is it at New Orleans; at Denver; at Santa Barbara?

Standard Time Belts. The main body of our country is so broad from east to west that more than three hours are required for rotation to carry it past the sun. When it is noon at Philadelphia, it is an hour before noon at New Orleans; two hours before noon at Denver; and three hours before noon at Santa Barbara. Hence, if we are told that a railroad train starts "at noon," we can not be sure of its time of starting, because it is noon at dif-



ferent places in the country for more than three hours after noon occurs on the Atlantic coast.

To avoid mistakes, delays, and confusion, the railroad companies of the country have adopted the times of the meridians of 75° , 90° , 105° , and 120° as the standards by which to run their trains. Thus, on most of the Atlantic coast the standard time of the railroads is that of the meridian of 75° , called "Eastern time"; throughout most of the Mississippi valley the standard is that of the meridian of 90° , called "Central time"; in the Rocky Mountain region the time of the meridian of 105° is standard for the railroads and is called "Mountain time"; and on the Pacific coast the standard is the time of the meridian of 120° , called "Pacific time."

There is a difference of one hour in standard time between each two adjacent "standard time belts"; hence a traveler whose watch marks railroad time in one part of the country can easily tell from it the correct railroad time in any other part by adding or subtracting the proper number of full hours.

Each railroad makes the change of standard time at some station where the locomotives and train crews are changed; and as such stations on different roads are seldom on the same meridian, the edges of the time belts are irregular. In the extreme southwest, Mountain time is not used, but a change is made from Central time directly to Pacific time. What is the amount of this change?

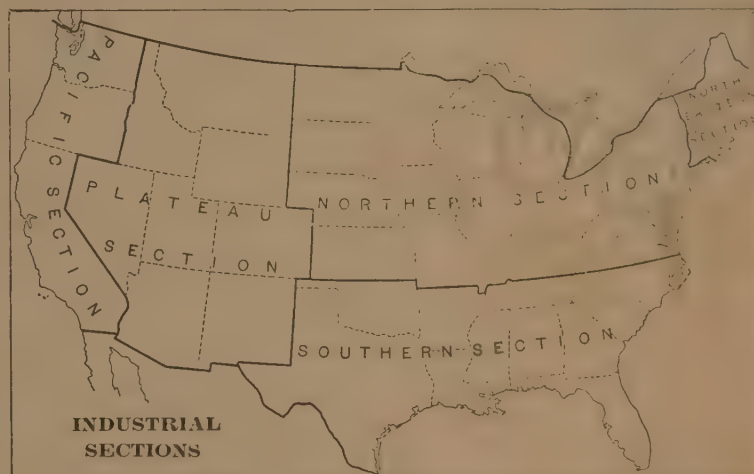
International Date Line. Suppose that two men, starting from the prime meridian on Monday noon, travel the one eastward and the other westward, each traveling just as fast as the earth rotates. The man who goes west keeps exactly beneath the sun all the time, and it seems to him to be still Monday noon when he reaches his starting point again

twenty-four hours later. He has *lost* a day in his reckoning by traveling westward around the earth.

The other man travels eastward over the earth as fast as the earth itself turns eastward, and therefore he moves away from the sun twice as fast as the prime meridian does. He therefore gains a day in his reckoning by traveling eastward around the earth.

To correct such errors in their dates, navigators usually add a day to their reckoning when they sail westward across the meridian of 180° , and subtract a day when they cross it to the eastward, and so the meridian of 180° is sometimes called the *International date line*.

Industrial Sections. We have seen that, owing largely to differences in relief, climate, and soil, the great productions of our country are confined more or less definitely to different regions. Hence the United States may be naturally separated into (1) the Northeastern, or cloth-manufacturing section; (2) the Northern, or food-, iron-, and coal-producing and manufacturing section; (3) the Southern, or cotton-producing section; (4) the Plateau, or grazing and gold- and silver-mining section; and (5) the Pacific, or Western food- and gold-producing section.



TOPICS ON RESOURCES AND PEOPLE

I. PEOPLE. Races: whites, negroes, Indians, Chinese,—distribution of each. Population: increase; distribution. Government: origin; Federal; state; territorial.

II. ADVANTAGES. Soil: alluvial; glacial. Climate: heat regions—northern, central, southern, western; length of winters; rainfall regions; influence of cyclones. Manufacturing facilities: streams; minerals. Transportation facilities: railroads; rivers.

III. PRODUCTS. Food: vegetable—regions, amount, kinds; animal—kinds, regions, amount; manufactures. Fibers: vegetable; animal; manufactures from. Timber: regions; amount. Minerals: regions; kinds; amounts.

IV. EXPORTS. Natural products. Manufactured products.

THE NORTHEASTERN SECTION

What states compose this section? What large river basin is north and what waters south and east of it? How does the distance of the section from the equator compare with its distance from the north pole? Locate the Green Mountains; the Berkshire Hills; the White Mountains; Mount Katahdin. Locate the chief lakes. Name the chief rivers, and locate their sources, courses, and mouths.

The six states in the extreme northeastern part of our country are often called New England. The surface in general is hilly, while the northwestern part of the section is traversed by the northern ranges of the Appa-



LUMBERING, MAINE.

lachians. Of these the Green Mountains are the most continuous, and the White Mountains, east of Connecticut River, are the highest.

The section is less suited to agriculture than any other part of the eastern lowlands. The valleys of the larger rivers are fertile, but over much of the uplands the soil is thin, unproductive, and covered with glacial boulders. In the northern part are extensive forests. Such crops as hay, apples, potatoes, and tobacco are raised in the valleys. Market gardening and dairying are carried on. The greater part of the food used by the people, however, comes from the West.

The numerous waterfalls of this section (p. 43) afford excellent water power, and manufacturing has become the chief occupation. Steam power is now largely used, however, coal for fuel being brought chiefly by sea from the ports of Chesapeake and Delaware bays.

The section produces practically no coal or raw materials, other than stone and wood; hence the articles manufactured are those which have a high value in comparison with that of the fuel and material used.

The chief manufactures are cotton and woolen cloth and boots and shoes, of which this section produces more than all the rest of the country. Other characteristic manufactures are brass goods, paper, wood pulp, light hardware, fine machinery, fire-arms, clothing, silk, jewelry, and rubber goods.

Over half the granite and marble, and much of the slate, used in the country are quarried in New England.

Southern New England is the most densely peopled

part of the United States. More than half the people there live in cities.

To supply the needs of the dense manufacturing population, the southern half of the section is covered with a network of railways, which connects it with the south and west, and also with the railway systems of Canada. The glacier-carved fiords and bays of the New England coast contain many fine harbors, from which vessels carry on an active coasting or fishing trade; and Boston maintains a large foreign commerce.

The care of "summer boarders" is an important occupation several months each year throughout New England, especially along the seashore and in the beautiful mountain and lake regions.

While the greater part of the population is native-born, there are many foreigners, largely Canadians, Irish, and English. As a whole the people are energetic and well educated, and they maintain fine public school systems. There are also located in this section several of the oldest and most noted universities and colleges in the country.

Maine. Bound Maine. How does this state compare with the rest of New England in size? How does it compare in size with the state in which you live (p. 50)? Describe the surface of Maine; its rivers; its coast. Name and locate the capital and the five chief cities of the state.

Maine belongs to the forest region of New England, about half of its surface being covered with pine, spruce, hemlock, and birch. These forests furnish lumber and the wood pulp used to make paper. Hay, potatoes, oats, and apples are the more important farm products. Quantities of granite and slate are quarried, and much ice is cut for shipment. Herring and cod are caught along the rocky coast, and on the shore of the sheltered bays are many herring-curing establishments (§ 131, p. 32).

Portland, the chief seaport and most important city, is connected by rail with the principal railway systems of Canada. It has a fine harbor with an important foreign commerce when the St. Lawrence is frozen. Its extensive manufactures include clothing, machinery, lumber, and boots and shoes. At *Lewiston* cotton and woolen goods are made. *Bangor*, at the head of navigation on the Penobscot, has shoe factories and is one of the great lumber depots of the country. *Biddeford* has large cotton mills. *Auburn* has large boot and shoe factories. At *Augusta*, the capital, cotton goods and shoes are manufactured.



MARBLE QUARRY, NEAR RUTLAND, VT.



WOOLEN MILL, DOVER, N.H.

New Hampshire. By what is New Hampshire bordered? How does it compare with Maine in size? What two rivers drain the larger part of it? What mountain group is in the north? Name the chief peak. Name and locate the largest lake; the capital; three other cities.

New Hampshire, often called the "Switzerland of America" because of its beautiful mountain scenery, has large forests and great granite quarries, both of which give rise to important industries. The chief industry, however, is manufacturing, which is largely carried on in the southern part of the state, where the water power of the Merrimac River is available. In the manufacture of boots and shoes this state takes high rank.

Manchester and *Nashua*, located at falls on the Merrimac, have large cotton mills. *Concord*, the capital, has cloth mills, wagon and carriage factories, and granite quarries. The fine water power at *Dover* is utilized by large cotton and woolen mills.

Vermont. What lake and river form nearly half the boundary of Vermont? What states and country border it? Has Vermont a seaport? Draw the main divide of the state. Name and locate the mountains of Vermont; the capital; the two chief cities.

The rounded summits of the Green Mountain range are covered with forests of evergreen pines and spruces. Vermont means "Green Mountain." There are many dairy farms and sheep ranges, and fine breeds of live stock are kept. Much hay is produced. Lumber is obtained from the forests, and more maple sugar is produced than in any other state. From Vermont come much granite and slate, and over half the marble quarried in the United States. Lumber, woollens, mu-

sical instruments, and scales are manufactured. There is considerable trade with Canada through Lake Champlain.

Burlington, the chief city, has a fine harbor and is an important lumber market. Near *Rutland* are the largest marble quarries in the world, and the notably white and durable marble gives rise to an extensive manufacture of monuments and tombstones.

Massachusetts. What states and waters border Massachusetts? Describe its coast; its surface. Name and locate its mountains; rivers; capes; bays; islands. Name and locate its capital; six other cities not far away; three cities on the Merrimac; two in southern Massachusetts; two on the Connecticut River; one in the central part of the state.

Massachusetts is one of the wealthiest states of the Union, although one of the smallest. It is very densely peopled. Manufacture and commerce are the leading industries. In this state are manufactured nearly half of the boots and shoes, and a large part of the cotton and woolen cloth and paper made in the United States. The commerce, both foreign and domestic, is very large. Many vessels enter the harbors, and the eastern part of the state is thickly intersected by railroads from the north, the west, and the south.

Massachusetts is foremost among the states of the



GUN FACTORY, SPRINGFIELD, MASS.



SHOE FACTORY, LYNN, MASS.

Union in the quarrying of granite and in the value of cod fisheries.

Boston is the great commercial center for nearly the whole of New England, receiving and distributing throughout the section raw materials, — wool, cotton,

hides, leather, rubber, and coal,—and receiving in return manufactured goods for distribution by sea or by railroad. It owes its growth and importance chiefly to the great size, depth, and excellence of its island-studded harbor at the head of Massachusetts Bay.

On the east water front are the great docks where foreign commerce is carried on; the mouth of Charles River, to the north, is used more for the coast trade. Nearly the whole steam railroad system of the section and many electric lines radiate from the city.

Boston is one of the great manufacturing centers of the United States; the making of clothing, fine machinery, and books are leading industries.

Because of the fine schools, colleges, and libraries there, and the great number of authors, musicians, and artists who have lived in or near the city, the citizens often call Boston the "Athens of America."

Boston is one of the oldest of the great American cities. The original Puritan settlement was on a small peninsula between Charles River and the harbor. On this peninsula there were three hills, and between them and the mainland were wide salt marshes which were flooded by the tides, so that at high water the peninsula was connected with the mainland only by a long, narrow "neck" of land. The marshes have been filled, and the newly made land and much of the mainland over which the city has spread have become fine residential quarters, while most of the old peninsula is given up to business.

Worcester is a great railroad center, and is noted for the manufacture of machinery, shoes, and wire. At *Cambridge* is located Harvard University, the oldest and one of the largest in the country. *Fall River*, *Lowell*,



PUBLIC LIBRARY, BOSTON, MASS.

and *New Bedford* are the great centers of cotton manufacture; *Lawrence*, of both cotton and wool; at *Lynn*, *Brockton*, and *Haverhill* millions of boots and shoes are made; at *Malden* rubber boots and shoes are made; and at *Springfield* is a United States arsenal and factory for firearms. *Somerville* has extensive meat packing houses. *Holyoke* has large paper mills. *Salem* has large tanneries.

Connecticut. By what states and waters is Connecticut bordered?

Describe its surface; drainage; coast. Name and locate the capital; the other important cities of the state.

Tobacco raising in the Connecticut valley, and dairying and vegetable and seed farming in the western and southern parts, are important industries. There are extensive oyster beds in Long Island Sound.

The state has valuable sandstone quarries and is especially noted for the variety of its manufactures. These include cotton and woolen goods, almost every kind of fine cutlery and hardware, tools, machinery, needles, pins, hooks and eyes, clocks, firearms, automobiles, sewing machines, and all kinds of brass and plated ware.

New Haven, the seat of Yale University, one of the most famous in the country, is the largest city and chief port. *Hartford* is the headquarters of many insurance companies, and is noted for the manufacture of machinery, vehicles, and firearms. *Bridgeport* manufactures ammunition and machinery; *Waterbury*, brass ware and clocks; *New Britain*, hardware; and *Meriden*, plated ware.



SPINNING IN A COTTON MILL, FALL RIVER, MASS.



LOCK WORKS, NEW BRITAIN, CONN.



PIN FACTORY, CONNECTICUT.

Rhode Island. Bound Rhode Island. Describe its drainage. Name a bay, a cape, and a river of this state; its capital; three other cities.

Rhode Island is the smallest and most densely populated state in the country, and in proportion to its size has the most manufacturing.

Providence, the second city in New England, exceeds all other cities in this country in the manufacture of jewelry. It has many woolen mills, foundries and machine shops, and silverware factories. *Pawtucket* and *Woonsocket* are centers of both cotton and woolen manufacture. *Newport* is a famous summer resort.

Supplemental Work. Read chapters 10, 11, and 12, "Carpenter's Geographical Reader, North America." Describe, as fully as Boston is described, one other city or place in New England.

THE NORTHERN SECTION

Begin this lesson by studying the Map Questions on page 60.

Throughout the Northern Section the surface is comparatively smooth and flat, except in the Appalachian region in the east, the Ozark Mountains in the south, and the Black Hills in the extreme west. The soil nearly everywhere is deep and fertile, and composed largely of the rock waste deposited by the old Laurentian glacier, which in New England swept much of the soil off into the sea.

The climate is favorable for agriculture, the summers being warm and, except in the extreme west, the rainfall is ample. The people have seized upon these natural advantages and have made agriculture the most important industry of the section; and through the invention and use of improved agricultural implements they have made this one of the greatest food-producing regions of the world.

In the states of this section, especially in the region west of the Appalachian Mountains, the chief



JEWELRY SHOP, PROVIDENCE, R.I.

food crops are raised in enormous quantities, so that about five sixths of our country's yield of wheat, corn, oats, hay, and potatoes comes from the section (maps, p. 51). Other food crops of lesser importance are grown, as well as the bulk of the tobacco crop of the United States.

Because domestic animals are largely dependent upon the attention of man and the crops which he raises, most of the hogs, cattle, and butter and eggs produced in the country come from this section (p. 52). On the Atlantic coast of the section are the greatest oyster fisheries of the United States.

In the forest regions of this section (map, p. 52), lumbering is an important industry; the pine belt of the



STORAGE YARD OF A BLAST FURNACE, PENNSYLVANIA.

Great Lakes being one of the great timber-producing regions of the Union.

The largest coal and iron mines of the country are in this section, and the section also supplies a large part of the product of petroleum and copper (pp. 52, 53). There are valuable lead and zinc mines west of the Ozark Mountains.

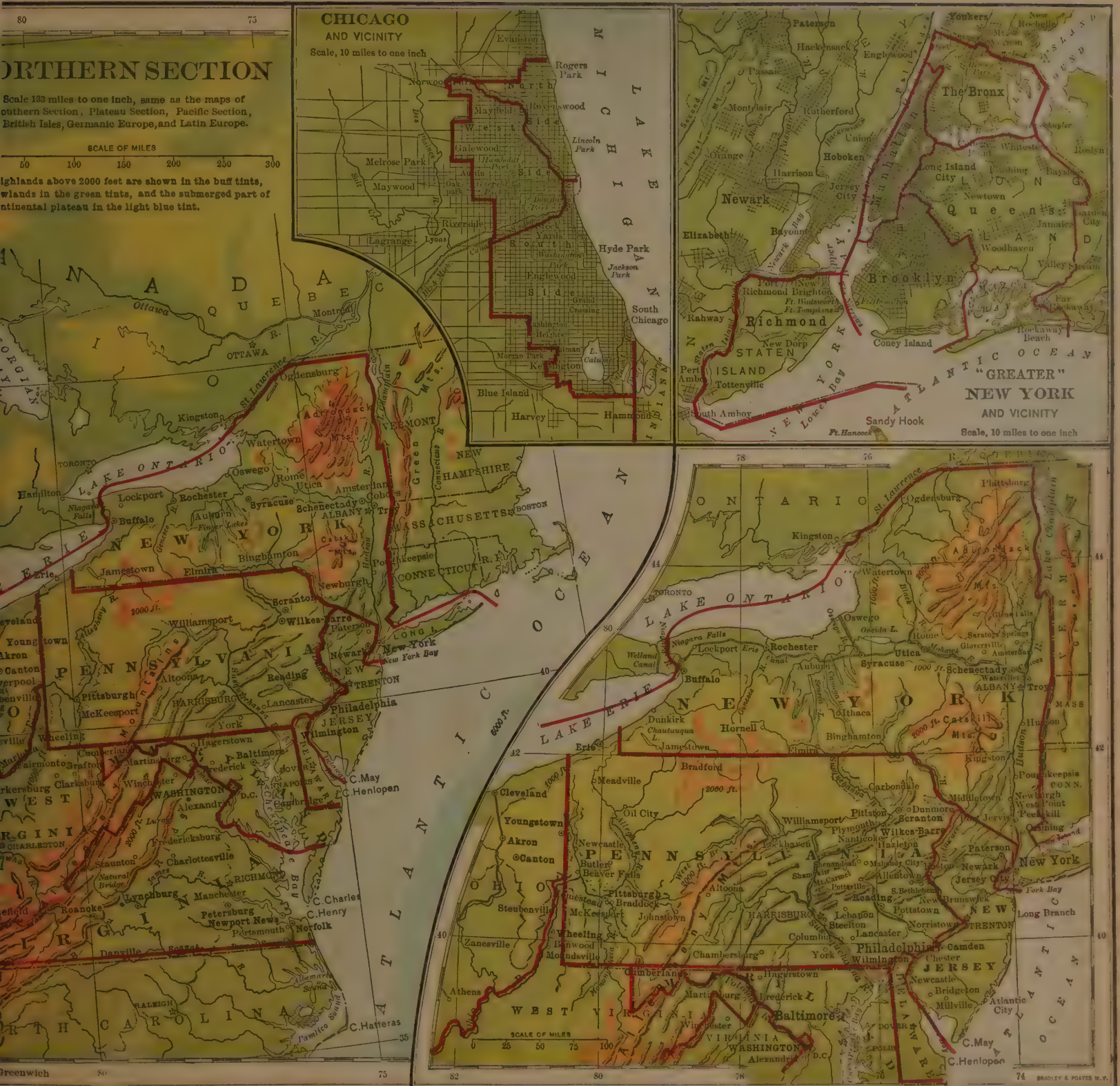


Map Questions. Which states of this section are crossed by the Appalachian Mountains or the Atlantic plain? Which states lie between the Appalachian Mountains and the Mississippi River? Which states lie mostly in the Lake plains? Which lie mostly in the Prairie plains? Which lie partly in the Great Plains?

It will be seen from the city map on p. 53 that the eastern and central parts of this section are included in the great manufacturing region of the United States. The manufactures are chiefly those which utilize the raw materials produced in the section — food products, lumber, and iron ore.

West of the Appalachian Mountains, flour milling and the packing and curing of meat are characteristic industries. Along the Great Lakes and on the Allegheny plateaus are sawmills, while the iron and steel industries are centered at points where coal and iron ore can be most cheaply brought together. The manufacture of tobacco is important in the southern part of the section. East of the mountains the manufactures are more varied and consume much raw material not produced in the section. The weaving of cotton, wool, and silk, and the refining of sugar, are extensive industries of this kind.

New York Bay, Delaware Bay, and Chesapeake Bay, which indent the east coast of this section, are all deep enough for the largest vessels, and contain the best har-



bors on our Atlantic coast south of New England. The chief rivers which flow into these bays—the Hudson, the Delaware, and the Susquehanna and Potomac—all rise west of the Appalachian ridges and cross them through water gaps (p. 44), but south of the Potomac River the Blue Ridge is an almost continuous wall between the coast and the Mississippi valley. The railroad map (p. 53) shows the effect of this peculiar Appalachian drainage on the railroad system of the country. The seaports on the three bays of this section are therefore among the largest cities of the country,

and through them by far the greater part of our foreign commerce passes.

West of the Appalachian Mountains the smooth surface of this section is covered with a network of railroads, by which raw materials are collected and taken to manufacturing centers, and the manufactured products are afterward distributed.

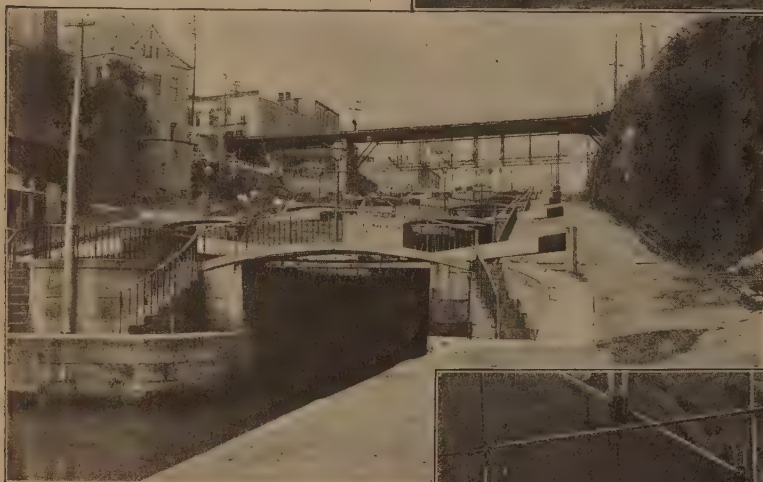
The Great Lakes are connected by navigable straits or canals, and form a commercial route of great importance. Niagara River, in its course from Lake Erie to Lake Ontario, plunges over a cliff about 160 feet

high, forming Niagara Falls—one of the grandest cataracts (§ 55) in the world. As the falls interrupt the navigation of the river, the Welland Canal has been constructed between the lakes, through Canada.

Canals have also been constructed in Canada around the rapids of the St. Lawrence River to tide water at Montreal. The Erie Canal, from Lake Erie by way of the low Mohawk valley to the Hudson, forms a most



NIAGARA FALLS.



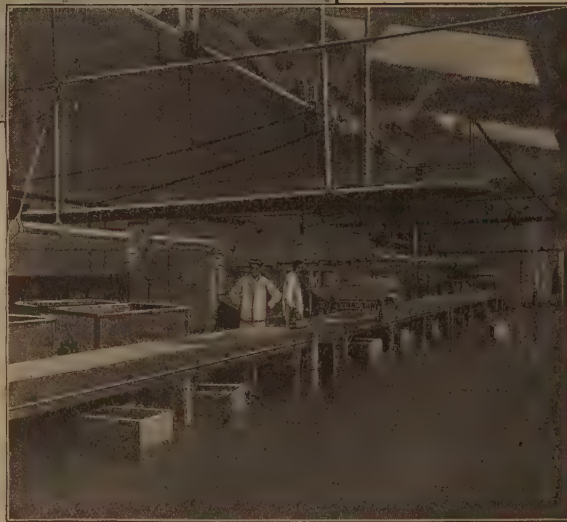
LOCKS ON THE ERIE CANAL.

important water route through our own country from the Great Lakes to tide water.

The Mississippi, Ohio, and Missouri rivers and many of their tributaries are much used for transporting coal, lumber, and other bulky freight. Several canals have been constructed through the low divide to connect the Great Lakes with the Mississippi system.

The Northern section contains about two thirds of all the people in the United States, and nearly three fourths of all the foreign immigrants in the country.

The Northern Appalachian States. The seven states of this section which are crossed by the Appalachian region or by the Atlantic plain are sometimes called the "Middle States." A very large part of our coal and petroleum, and much iron ore, come from this region. Manufacturing and the production of food crops are more important in the northern part, while market gardening and the production of oysters and tobacco are of great importance in the southern.



CREAMERY, SOUTHERN NEW YORK.

New York. What states and country border New York? What three lakes form part of the boundary? What river system drains the northern part? Trace its divide across the state. To what great river system does the southwestern part drain? In what slope is the south-eastern half of the state? Name and locate the mountains of New York; the islands; the lakes. By what river are the small lakes in the west-central part drained into Lake Ontario? What is the chief tributary of the Hudson? Name and locate the capital; the chief city; the chief lake port; a city on the Genesee River; four other large cities.

New York, though of only medium size, is the first state in the Union in population,

commerce, and manufacturing, and is one of the first in agriculture. Its preëminence depends largely upon the existence in the state of the lowest route to the West through the Appalachian Mountains. This route, following the Hudson and Mohawk valleys, is occupied by railroads and the Erie Canal. As passengers and freight do not have to be lifted over the mountains, transportation is

easy and cheap, and the route has become a great commercial thoroughfare, attracting population and developing industries in its neighborhood, and making New York city, with its fine harbor, the greatest seaport in America. Canals connect the Hudson with the St. Lawrence through Lake Champlain, and also with the Delaware and the coal fields of Pennsylvania.

Much water power is utilized in manufacturing, and fuel is obtained from the near-by Pennsylvania coal fields. Clothing, machinery, printed matter, textiles, refined sugar, beer, packed meat, and tobacco are the chief manufactures.

The state is noted for its dairy products, and for its large crops of potatoes,

buckwheat, and hops. Much salt is also obtained, especially from wells in the Genesee valley.

New York is the largest and most important city in the United States, and is second only to London among the great cities of the world. It contains nearly five millions of people, and covers a land area of about 360 square miles.

Founded by the Dutch on the south end of Manhattan Island, at the mouth of the Hudson, the city has gradually spread over the island, and has also taken within its limits a part of the mainland to the north, Staten Island, and the west end of Long Island, including the great city of Brooklyn.

Traffic from the west and south reaches the city by ferry, and tunnels which extend under the Hudson River. The harbor is large enough to accommodate many hundreds of ships. More than half of the foreign trade of the country is carried on through this port.

So much money is controlled by the banks of New York that when great business enterprises are started anywhere in the country the capital required is generally obtained in New York.

New York is the chief manufacturing city of the country. Nearly everything needed by man is made here, but the making of clothing is by far the greatest industry.

Large quantities of raw sugar from the West Indies are refined, and petroleum, flowing from western Pennsylvania through pipe lines, is made into kerosene in the vicinity. More books, magazines, and newspapers are published in New York than in any other city of the United States. Columbia University, one of the largest universities in the country, is located in New York.

The southern half of Manhattan Island embraces the wholesale business region, and it is much crowded. Thousands of the business men live ten or more miles from their places of business — in the northern part of the city, on Long Island, on Staten Island, in New Jersey, and on the mainland to the north.

Buffalo is the western terminus of the Erie Canal, and a great railroad center. The reshipment of wheat, flour, and meat from the West is a very important industry. Much coal and salt are shipped westward. Packed meats, iron and steel machinery, and linseed oil are the chief manufactures. Electricity generated by the water power of Niagara Falls is used in Buffalo.

Rochester, at the falls of the Genesee, manufactures clothing, boots and shoes, and machinery, and has many nurseries in its vicinity. *Syracuse* manufactures clothing, machinery, and iron and steel, and has famous salt springs. *Albany*, the capital, is an important railroad center, and manufactures cars, beer, and machinery. *Troy* is the terminus of the Erie Canal and of the Champlain Canal. It is also at the head of tidewater in the Hudson. It has large manufactories of shirts, collars, and cuffs, and foundries and machine shops. *Utica* manufactures clothing and knit goods, and has large nurseries. It is the chief cheese market of central New



OFFICE BUILDINGS, NEW YORK CITY.

York. *Yonkers* and *Schenectady* are also large manufacturing cities.

At *West Point* is the United States Military Academy. Cornell University, at *Ithaca*, is among our largest institutions of learning.

Pennsylvania. What states border Pennsylvania? Describe its surface. Trace across the state the principal divide. What two large rivers are on the eastern slope; on the western? Into what does each flow? Locate the capital; the chief city; three other important cities of the eastern slope; two of the western.

Pennsylvania is the great coal-producing state, and stands second in population and the value of manufactures. Bituminous coal is found in the Allegheny plateaus, and anthracite coal in the rock folds of the ridges in the northeastern part of the state. Much petroleum is obtained in the Allegheny and Monongahela valleys. Other mineral products are cement and slate.

The characteristic manufactures of the western part of the state are iron and steel (from Lake Superior ore), and coke made from coal. In these industries Pennsylvania exceeds all the other states combined. In the eastern part of the state, the weaving of wool, cotton, and silk is an important industry; and machinery, cars,



COAL MINE, PENNSYLVANIA.



ENTRANCE TO HARBOR, BUFFALO, N.Y.

flour, and refined sugar and petroleum products are manufactured extensively.

From the forest-covered mountains lumber is floated down the rivers to the sawmills and planing mills, and with the oak and hemlock bark much leather is tanned in the northwestern part of the state.



SHIPBUILDING, PHILADELPHIA, PA.

The soil of the valleys and of the eastern lowland is fertile, and Pennsylvania has a high rank as an agricultural state. Dairying is an important industry.

Several great railroads from the seaboard to the Mississippi valley cross the mountains in this state amidst beautiful scenery. Railroads also connect the bituminous coal regions with Lake Erie, and the anthracite coal regions have rail and canal connection with New York, Delaware, and Chesapeake bays.

Philadelphia is the third city in the Union in population. It was founded by English Quakers, and for a long time was called "the Quaker City." It was laid out between the Delaware and Schuylkill rivers near their junction, but it has now spread far west of the Schuylkill and along the Delaware for many miles.

The nearness of the anthracite coal region makes fuel plentiful and cheap, and Philadelphia has become one of the greatest manufacturing cities of the country. Among its manufactures are woolen goods, carpets, and clothing. Sugar refin-

ing, tanning, and the making of heavy machinery, locomotives, and steamships, are also important industries.

Ocean steamers ascend to the wharves of Philadelphia, and much coal is exported.

Congress was in session in Philadelphia when it declared the independence of this country in 1776. After the Revolutionary War Philadelphia was the capital of the country for several years. Independence Hall, in which the Declaration of Independence was made and the Constitution framed, is much visited. In Philadelphia is located the great University of Pennsylvania.

Pittsburgh, which now includes the city of Allegheny, forms the great center of population in western Pennsylvania. It is in the heart of the bituminous coal, petroleum, and natural gas region. The city possesses the great commercial advantage of the water routes afforded by the Ohio and the two rivers which here unite to form it, and great quantities of coal are shipped from Pittsburgh down the Ohio River. A large part of the coke of the country, and much of the structural and railway iron and steel, are made here; Pittsburgh is also the greatest center in the world for the manufacture of plate glass. Pickles, packed meat, and leather are also manufactured.

Scranton is a mining center of the anthracite coal region. It is also a railroad center, with large iron and steel works, silk mills, and machine shops. *Reading*

is in a rich agricultural region, and receives by canal cheap fuel from the anthracite regions to supply its iron and steel works and foundries. *Erie* has a fine harbor and a large trade in iron ore, lumber, and coal. It has important steel works, foundries, and flour mills. *Wilkes-Barre*, in the anthracite coal region, manufactures iron and steel machinery, silk, and lumber. *Harrisburg*, the capital, is located in a fertile region, and manufactures iron, steel, and railroad cars.

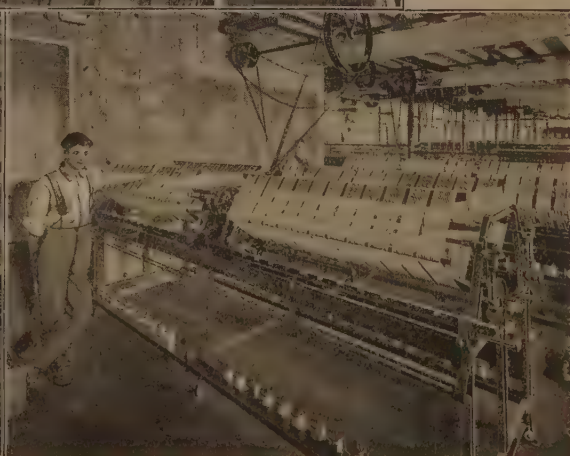
POTTERY, TRENTON, N.J.



New Jersey. Bound New Jersey. Describe the coast. Locate two large bays; the mountains; the capital; three large cities in the northern part; one in the western part.



CARPET WEAVING, PHILADELPHIA, PA.



SILK FACTORY, PATERSON, N.J.

New Jersey is one of the small states of the Union. The northeastern part, however, is a great commercial and manufacturing region. The state ranks first in the manufacture of silk. The making of machinery, malt liquors, and leather, and the refining of petroleum, are important industries. Vegetables and fruit are raised in large quantities. The coast

region is sandy, and the beaches are great summer resorts. The state is crossed by two canals and many railroads.

Newark manufactures leather, jewelry, malt liquors, and machinery. *Jersey City* is commercially a part of New York city. It has many manufactories. Here and in the adjoining cities of *Hoboken* and *Bayonne* are the terminal freight and coal yards of many railroads, and extensive wharves of many ocean and coastwise steamer lines. In *Paterson* more silk is manufactured than in any other American city. *Trenton* manufactures steel goods and pottery. *Camden*, really a suburb of Philadelphia, manufactures leather, steamships, woolen goods, and machinery. *Elizabeth* manufactures machinery.

Delaware. By what waters and states is Delaware bounded? Compare it in size with New Jersey. Locate the capital; the chief city.

Delaware lies wholly in the coast plain. The northern part is a manufacturing region; the southern part a



POWDER WORKS, WILMINGTON, DEL.

grain, vegetable, and fruit region, the Delaware peaches being particularly excellent and abundant. The canning of fruits and vegetables is an important industry.

Wilmington contains a large part of the population of Delaware, and within its limits are most of the important manufactories of the state. Here are tanneries, car works, shipyards, machine shops, foundries, and powder works.

Maryland. What river forms most of the southern boundary of Maryland? By what states is Maryland bounded? What other states own parts of the peninsula including eastern Maryland? Which part of the state is in the mountain region? Locate the capital; the chief city; one other city.

Chesapeake Bay has many good harbors, and the chief oyster beds of the country. Grain, fruit, vegetables, and tobacco are important products. In the mountains of the western part are valuable coal mines.



CONGRESSIONAL LIBRARY, WASHINGTON.

Baltimore is one of the cities on the Fall line (p. 43). Its fine harbor, to which the valley of the Potomac River is an accessible route, is nearer the grain region of the interior than of any other large Atlantic seaport. For these reasons Baltimore is a great food-shipping port. The making of clothing, the canning of fruit, vegetables, and oysters from the surrounding region, and the manufacture of tobacco, are the principal industries. Baltimore is the seat of the famous Johns Hopkins University.

Cumberland has a canal to tide water in the Potomac, and is the shipping point for the Maryland coal regions. It has important iron and steel works and foundries.

At *Annapolis* is the United States Naval Academy.

The District of Columbia. The District of Columbia was given to the United States by Maryland as a site for the national capital.

Washington, the most beautiful city in the United States, is situated where the Potomac River crosses the Fall line. Unlike most cities, it was planned as a large capital city before it was built. It has broad, straight streets and avenues, and many parks. These are shaded with fine trees and decorated with statues and monuments.

Though Washington is built where water power can be obtained, and where navigation from the sea is possible, the city has little commerce or manufacturing other than government printing. It has grown up simply as the national capital.

The President of the United States lives in Washington, as well as the members of the Cabinet and the foreign ministers who come to our country from all the nations of the earth to represent their governments and to look after the interests of their people. The senators and representatives meet in the Capitol (p. 48), and Congress is in session for several months of each year.



WHARVES, BALTIMORE, MD.



TOBACCO MARKET, DANVILLE, VA.

Virginia. What states border Virginia? Trace through the state the divide of the Mississippi basin. Name three rivers of the Atlantic slope; two of the Mississippi slope. Locate two capes; the mountain ranges; the capital; the chief seaports; two other important cities in the basin of the James; two in the Roanoke basin.

Virginia ranks among the foremost states in the Union in the production of tobacco, and its peanut crop is the largest in the country. The Great Valley west of Blue Ridge is a fertile wheat region. In it are the caverns (§ 42, p. 13) of Luray, and the Natural Bridge. About half the people of the state are engaged in agriculture.

There are valuable coal and iron mines. By means of the valleys and water gaps of the Kanawha, Roanoke, James, and Potomac rivers, several railway lines cross the mountains and convey coal and other products to the harbors of Chesapeake Bay.

Richmond, the industrial center and capital, is famous as the capital of the Confederacy during the Civil War. It has a large trade and extensive manufactories of tobacco, machinery, and iron goods. *Norfolk* (with *Portsmouth* opposite) has a fine harbor and is an important shipping point, especially for coal and cotton. A United States Navy Yard is located near here. *Petersburg*, on the Fall line, has cotton and silk mills and tobacco factories. *Roanoke* has large iron and machine works. *Newport News* is an important railroad terminus and seaport. Steel vessels are built in its shipyards. *Lynchburg* and *Danville* are tobacco markets.

West Virginia. Bound West Virginia. Trace the main divide across the state. What river basin embraces most of the state? Locate the capital; three cities on the Ohio.

West Virginia is one of the foremost states in the production of petroleum, coal, and natural gas. Much salt also is produced. There are extensive forests and

fine grazing lands on the plateaus; farming is pursued chiefly in the fertile lower lands farther west.

Wheeling, in a coal and gas region, manufactures steel and glass. *Huntington* ships coal and lumber. *Parkersburg* is in the oil region; and *Charleston*, in the lumber region.

Supplemental Work. Read chapters '6-9, 13, 27-30, "Carpenter's Geographical Reader, North America." Describe, as fully as New York is described, one other city in this section.

The Ohio Valley and Upper Lake States. The six states of this section that lie between the Appalachian Mountains and the Mississippi River are sometimes called the

"East Central States." Name these states. Through them trace the divide between the St. Lawrence and Mississippi basins. Which states are in both basins? Which are in only one basin? A larger or smaller part of each of these states lies in the Prairie plains, and all are heavy producers of grain and meat. Extensive forests and rich deposits of coal add to the resources of this group.



COAL MINE, WEST VIRGINIA.



HARBOR OF CLEVELAND, OHIO.

Ohio. Give the natural boundaries of Ohio. What states border it? Name one tributary of Lake Erie; two of the Ohio. Trace through the state the main divide. Locate the capital; two lake ports; five other important cities.

Ohio holds a high rank both in manufacturing and in agriculture, and it is one of the chief wool-growing states in the Union. It stands high also in the production of petroleum and natural gas. The abundance of iron ore and coal in the eastern part of the state, and the ease with which ore can be obtained from the Lake Superior regions by way of the Great Lakes, give to Ohio great advantages for manufacturing. Iron and steel, machin-

ery, flour, lumber, liquors, and tobacco are important manufactures. Fruit farming, dairying, and tobacco raising are carried on extensively.

Cleveland, the largest city of Ohio, is situated on Lake Erie at the mouth of Cuyahoga River. From this point a canal extends south to the Ohio River by way of the Scioto valley. Several railroads leading to the Mohawk valley from the agricultural regions to the west and southwest, converge at Cleveland and help to make it a great commercial center. The nearness of coal, petroleum, and natural gas fields to the southeast, and the low rate at which grain, lumber, and iron ore can be received by way of the Great Lakes, have made Cleveland a great manufacturing center. Iron and steel manufacturing, meat packing, petroleum refining, and shipbuilding are among the chief industries.

Cincinnati is situated on the broad flood plain of the Ohio, between the Great and Little Miami rivers, and opposite the mouth of the Licking—the valleys of these streams affording gradual descent to the Ohio River at this point. Through one of these valleys a canal extends to Lake Erie. Before railroads existed, the Ohio was the chief trade route of this whole region, and Cincinnati soon became the greatest commercial center of the Ohio basin. Cheap coal is obtained by river from Pittsburg, and Cincinnati has become a great manufacturing center. The chief manufactures are clothing, distilled and malt liquors, and machinery. The part of the city in the flood plain is devoted largely to business, while the residential part on the surrounding hill tops is reached by several inclined-plane railroads up the steep face of the bluffs.

Columbus, the capital, on the canal from Cleveland to the Ohio, is an important trade center, and manufactures iron and steel, and machinery. *Toledo*, a great railroad center, with a fine harbor and a canal to Cincinnati, is an important commercial and manufacturing city. *Dayton*, on the canal from Toledo to Cincinnati, manufactures machinery. *Youngstown* has iron and steel works. *Akron* is noted for the manufacture of rubber goods,

and *Canton* for farming machinery and iron-work.

Indiana. What states border Indiana? What rivers are on the boundary? What tributary of the Ohio drains most of the state? Locate the capital; two cities in the northern part of the state; two in the southern part.

Indiana stands very high both as an agricultural and as a manufacturing state. In the state is found an abundance of coal (map, p. 52), natural gas, and petroleum. In order to pass south of Lake Michigan, most of the great east and

west railroads of the country cross this state; and the Ohio and Wabash rivers are natural routes of commerce.

Indianapolis, an important railroad center, has an immense domestic trade. A belt railroad encircles the city and connects all the centering lines with the packing houses, grain elevators, flour mills, stock yards, and machine shops.

Evansville, the chief shipping port of southern Indiana, has flour and lumber mills. *Fort Wayne* has extensive car and machine shops. *Terre Haute*, at the head of navigation on the Wabash, has large distilleries. *South Bend* manufactures carriages and wagons, and farming machinery.

Illinois. What states border Illinois? Name the boundary waters. Compare the extent of lake coast with that of Indiana. Trace the Mississippi-St. Lawrence divide through the state. Name three tributaries of the Mississippi. Name the capital; the great lake port; two cities on the Mississippi River; three other cities. How can a cargo of grain go from Chicago to the Atlantic ports?

Illinois is in the heart of the corn, wheat, and stock-raising region, and is one of the greatest food-producing states of the Union. The middle coal field underlies almost the entire state, and, by supplying cheap fuel, enables Illinois to take high rank as a manufacturing state.

The railroad system is extensive, and the state is traversed by a navigable water route connecting the Mississippi River with Lake Michigan by way of the Illinois River.

Chicago is the largest city on the continent, except New York, and it is the greatest market in the world for meat and grain. It is at



RIVER LANDING, CINCINNATI, OHIO.



PETROLEUM WELL, INDIANA.

the mouth of Chicago River, which forms the harbor. The first houses there were built about a hundred years ago, and the city has grown very rapidly. It now extends twenty-five miles along the lake front and several miles back over the prairies. It contains over two million people.

Chicago is in the center of the greatest grain and stock-raising region of the world, and the forests of the north are easy of access. There is an ample supply of coal in the region just south of the city, and from the shores of Lake Superior is received the best of iron ore. Freight may be carried on the Great Lakes and canals to the Atlantic seaports of New York and Montreal, or by railroads which enter the city; for Chicago is the greatest railroad center in the world. As a result, Chicago is not only a great commercial city but a great manufacturing center. Thousands of cattle

is an important coal-mining center. *Rockford* manufactures furniture, knit goods, and machinery. *East St. Louis* is a railroad and manufacturing center. *Joliet* has great iron and steel works and quarries.

Kentucky. Bound Kentucky. What three rivers form much of its boundary? Name the principal rivers. Locate the capital; four important cities.

Kentucky produces about one third of the tobacco raised in the whole country, but corn is the most valuable crop. Hemp and sorghum are also characteristic crops. Much live stock is raised, especially fine horses. Kentucky has iron and coal mines and fine hardwood forests. Mammoth Cave, in the central part of the state, is one of the largest caverns known.

Louisville, at the "falls," or rapids, of the Ohio, is a great tobacco market. A canal for steamers extends

MEAT PACKING, CHICAGO.



STOCK YARDS, CHICAGO.

and hogs are killed every day in the stock yards, and vast quantities of beef, pork, and other manufactured animal products are sent to all parts of the country. Tanneries take the hides and convert them into leather, and mills change the timber of the North into planed lumber, furniture, railroad cars, and agricultural implements. Steel rails and beams, machinery, clothing, books, and electrical goods are manufactured extensively.

The University of Chicago, though one of the youngest universities, is one of the largest in the United States.

Peoria, on the Illinois River, has great distilleries, stock yards, meat-packing establishments, and machine shops. *Quincy* is a large trade center, and has flour mills, breweries, and foundries. *Springfield*, the capital,



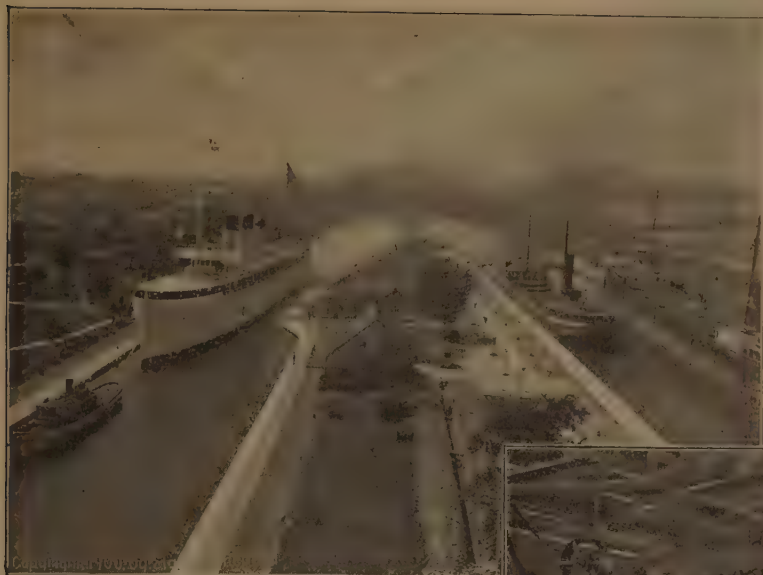
STOCK FARM, KENTUCKY.

around the rapids. Great quantities of tobacco, cottonseed oil, and liquors are manufactured.

Covington and *Newport*, opposite Cincinnati, are part of that center, industrially. *Lexington*, in the Blue Grass region, is noted for race horses and fine stock.

Michigan. By which of the Great Lakes is Michigan bordered? Locate the Strait of Mackinac; the St. Marys River and Canal; Lake St. Clair; the capital; three cities north of the capital; two west; two south and east.

In northern and central Michigan lumbering and mining are the important industries. The pine forests of Michigan have furnished to the whole section much of its building lumber, and from this state are also obtained about one third of the iron ore, copper, and salt produced in the country, and some coal. A greater amount



"Soo" CANAL, MICHIGAN.

of freight passes through the St. Marys, or "Soo," Canal than through any other canal in the world.

The chief occupation of southern Michigan is agriculture, the state taking a high rank in the yield of dairy products, potatoes, sugar beets, fruits, and wool.

Detroit is one of the oldest cities in the Central Lowland, having been founded by the French from the lower St. Lawrence valley more than two hundred years ago. It has extensive transportation facilities by both water and rail, and has become a great commercial and manufacturing center. The chief manufactures are cars, machinery, tobacco, drugs, and iron and steel.

Grand Rapids has the best water power in the state, and is especially noted for the manufacture of furniture. *Saginaw* is the center of the beet sugar and coal-mining industries, and with *Bay City* is engaged in the lumber trade and the manufacture of salt. *Kalamazoo* is the center of a great celery-producing region. *Flint* has carriage and automobile works, and woolen mills, and *Jackson* is a railroad center. *Ann Arbor* is the seat of the famous University of Michigan.

Wisconsin. What states border Wisconsin? What rivers and lakes form part of its boundary? Name three tributaries of the Mississippi River; one of Lake Michigan. Locate the capital; three cities on Lake Michigan; three other cities.

Northern Wisconsin is covered with valuable pine forests, and contains rich deposits of iron ore. In the southern part of the state dairying is a large industry, and grain, potatoes, and tobacco are important crops. An important water route between Lake Michigan and the Mississippi, by way of the Fox and Wisconsin valleys, crosses the state.

Milwaukee, like *Detroit*, occupies the site of an old Indian town, whither white men came early to trade for furs. It is an important shipping port for grain and lumber, and has extensive machine shops, breweries, tanneries, iron and steel works, and flour mills.

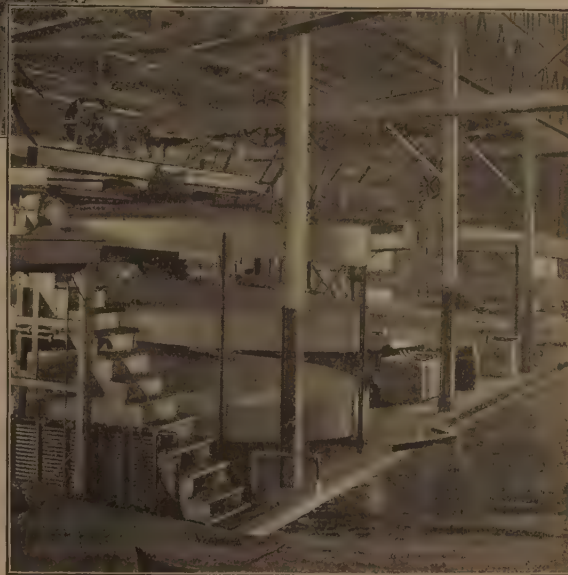
Superior ships wheat, iron ore, and lumber, and receives great quantities of coal. It has important flour and lumber mills, shipyards, and iron foundries. *Racine* has a large commerce on the lake, and manufactures agricultural machines. *Oshkosh* and *La Crosse* are centers of the lumber trade, and *La Crosse* has a large flour-milling industry. *Madison*, the capital, is the seat of the large state university. *Sheboygan* has furniture factories.

Supplemental Work. Read chapters 21, 23-26, 31, 32, "Carpenter's Geographical Reader, North America." Describe, as fully as Chicago is described, one other city in the section.

States of the Missouri Basin. The seven states of the Northern Section west of the Mississippi River are sometimes called the "West Central States." Name them (map, p. 60). Which of them lie partly or wholly in the Missouri basin? Through these states trace the divide between the Gulf slope and the St. Lawrence and Hudson Bay slopes. Which state is in all three of these slopes?

The high western portion of this group affords excellent pasturage for cattle, but it is subject to droughts which render farming uncertain except by the aid of irrigation. The lower eastern portion, however, has ample rainfall and great fertility, and yields about half of the grain and meat product of the country. This group of states produces nearly all the flaxseed (from which linseed oil is made) raised in the United States.

Minnesota. Give the boundaries of Minnesota. What three great river systems have their headwaters in this state? Which system drains the greater part of the state? Locate the capital; three other cities.



COPPER MILL, MICHIGAN.



SHIPPING IRON ORE, SUPERIOR, WIS.

Minnesota is one of the foremost wheat-producing states. Wheat is raised in all parts of the state, but especially in the flat valley of the Red River. During the glacial period most of this valley was a vast lake, upon the bottom of which was deposited the sediment that forms the fertile soil and level surface of the present wheat fields.

In the Mesaba and Vermilion ranges in the north-eastern part of the state are found some of the richest and most extensive iron mines in the world.

More than half of the state is forest-clad,—with pine in the north and with oak and other hard woods in the south-east,—and lumbering is an active industry.

Minneapolis, at the Falls of St. Anthony, and *St. Paul*, at the head of navigation on the Mississippi River, though separate cities, really form a single center of population and one of the ten greatest manufacturing and commercial centers in the country. Minneapolis is the greatest flour-milling city in the world, and lumber milling is also very important, the water power of the falls being largely utilized in both industries.

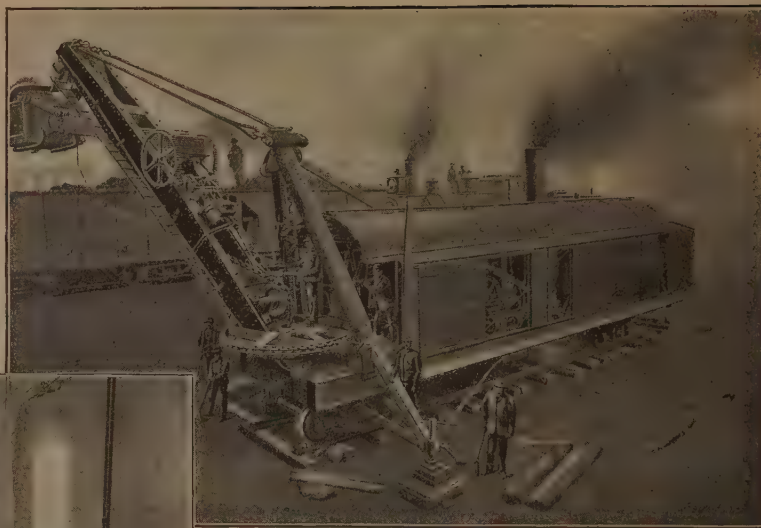
Duluth, with the city of Superior opposite, forms another center of population. It has large lumber mills, and a fine harbor with great docks and elevators. It is at the eastern end of a railroad to the Pacific, and at the head of navigation on the Great Lakes, and ships wheat, flour, lumber, iron ore, and copper. *Winona* has a large trade in lumber and wheat.

Iowa. Bound Iowa. What rivers form part of its boundary? Which three states of the Northeastern Section are within the parallels that bound Iowa? How does Iowa compare in area with these three states? Locate its capital; four cities in the east; two in the west.

Iowa is one of the greatest agricultural and stock-producing states in the Union. All kinds of farm produce are raised in great quantities, particularly corn, oats, hay,



THRASHING WHEAT, IOWA.



LOADING IRON ORE, MINNESOTA.



FLOUR MILL, MINNEAPOLIS, MINN.

poultry, eggs, and dairy products. Much bituminous coal is mined.

Des Moines, the capital, is an important railroad and trade center in a mining and rich grazing region. Medicines, flour, and machinery are manufactured.

Dubuque has lumber mills, breweries, and carriage factories. *Sioux City* has large meat-packing establishments. *Davenport*, with Rock Island and Moline opposite, forms an important center of trade. It is a great grain market, and manufactures machinery and packed meat. *Cedar Rapids* and *Waterloo* are busy trade centers. *Council Bluffs* is an important river port.

Missouri. What states border Missouri? What rivers form part of the boundary? What mountains are in the state? Locate its capital; its five chief cities.

The raising of grain, sorghum, cattle, and hogs is the chief occupation on the rolling prairies of the northern half of the state. In the forest-covered plateau of the Ozark Mountains the production of fruit and wool, and lumbering, are important industries. Much coal is mined in northern, central, and western Missouri, and much zinc and lead in the southwest corner of the state.

St. Louis is the largest city in the Mississippi basin, and is exceeded in population by but three cities in the Union. Situated on the Mississippi River between the mouths of the Missouri and Ohio, it has admirable facilities for river transportation to all parts of the Mississippi basin. With the building of railroads and the development of the Mississippi valley, it has become a great railway and manufacturing center. It is one of the chief commercial cities of the country, and the principal collecting and distributing point for much of the southwestern quarter of the United States.

Kansas City is an important receiving and distributing point for a large region to the west. It is continuous with Kansas City, Kansas. *St. Joseph* is



CORN FIELD, KANSAS.

noted for meat packing and flour milling. *Joplin* is a mining center. *Springfield* has important flour mills and a large local trade.

Kansas. What states border Kansas? What can you say of the altitude of the state? Name its two chief rivers; its capital; three other cities.

The surface of Kansas is a long, gradual slope, the western boundary being about half a mile higher than the eastern. The rainfall in the east is sufficient for very successful farming. The west is drier, but affords excellent pasturage for cattle (§ 130). Kansas ranks among the leading states in the production of corn, wheat, cattle, horses, and hogs. There are important coal, zinc, and lead mines and petroleum wells in the eastern part of the state, and salt mines in the central part.

Kansas City is continuous with *Kansas City, Missouri*. In slaughtering and meat packing, its leading industry, the city ranks next to *Chicago*. *Topeka*, the capital, has large flour mills. *Wichita* is in a wheat-growing and stock-raising region. *Leavenworth* is in a coal-mining region of northeastern Kansas.

Nebraska. What states border Nebraska? How does Nebraska resemble Kansas in surface? in drainage? What river forms its eastern boundary? What tributary of the *Missouri* drains most of the state? Locate the capital; one other large city.

Nebraska, like Kansas, lies on the long, gradual slope west of the *Missouri River*, down which the wide, shallow tributaries of that stream flow in broad valleys. In the west, cattle herding is the chief industry; in the east, farming. Explain this difference.

Omaha and *South Omaha* in Nebraska, with *Council Bluffs* in Iowa, form a single center of population, commerce, and manufacturing. There are very large meat-packing establishments, extensive breweries, and smelting and refining works.

Lincoln, the capital, is a trade center, with a large distributing business in coal, grain, and live stock.

South Dakota. What states border South Dakota? In what part of the state is the greatest elevation of land? What river drains nearly the whole state? Locate the capital and chief cities.

South Dakota has a more uneven surface than either Kansas or Nebraska. In the east are hills of glacial drift, and near the western boundary is a cluster of mountains called the *Black Hills*. Here gold and silver are mined and tin ore is found. In the eastern part of the state wheat and flaxseed are important crops.

Sioux Falls has fine water power, and is the railroad center of the state. *Aberdeen* is in a rich agricultural region. *Lead* is a mining center in the *Black Hills* region.

North Dakota. What states and country bound North Dakota? What river boundary has it? What three states does it resemble in surface? In what two drainage slopes does it lie? Trace the divide between them. Locate the capital and chief cities.



BEET SUGAR FACTORY, NEBRASKA.

Much of North Dakota east of the *Missouri* is covered with glacial drift. Here also is part of the fine *Red River* wheat region (p. 70). Some of the wheat farms are thousands of acres in extent. Much flaxseed is raised, and stock raising is an important industry.

Fargo, at the head of navigation on the *Red River*, is the center of several railroad lines. *Grand Forks* is in the rich wheat region.

Supplemental Work. Read chapter 21 of McMaster's "School History of the United States," and tell some anecdote connected with the history of this section. Read chapter 22, "Carpenter's Geographical Reader, North America." Describe, as fully as *St. Louis* is described, one other city in the section.



FARM, NORTH DAKOTA.



THE SOUTHERN SECTION

Which part of this section is highland? Which part is lowland? Which states contain part of the Appalachian Mountains? Which states lie partly or wholly in the Atlantic plain? Which lie partly or wholly in the Gulf plain? Which are broken by the Ozark Mountains? Which lie partly in the Great Plains? Which quarter of the United States embraces most of the Southern Section?

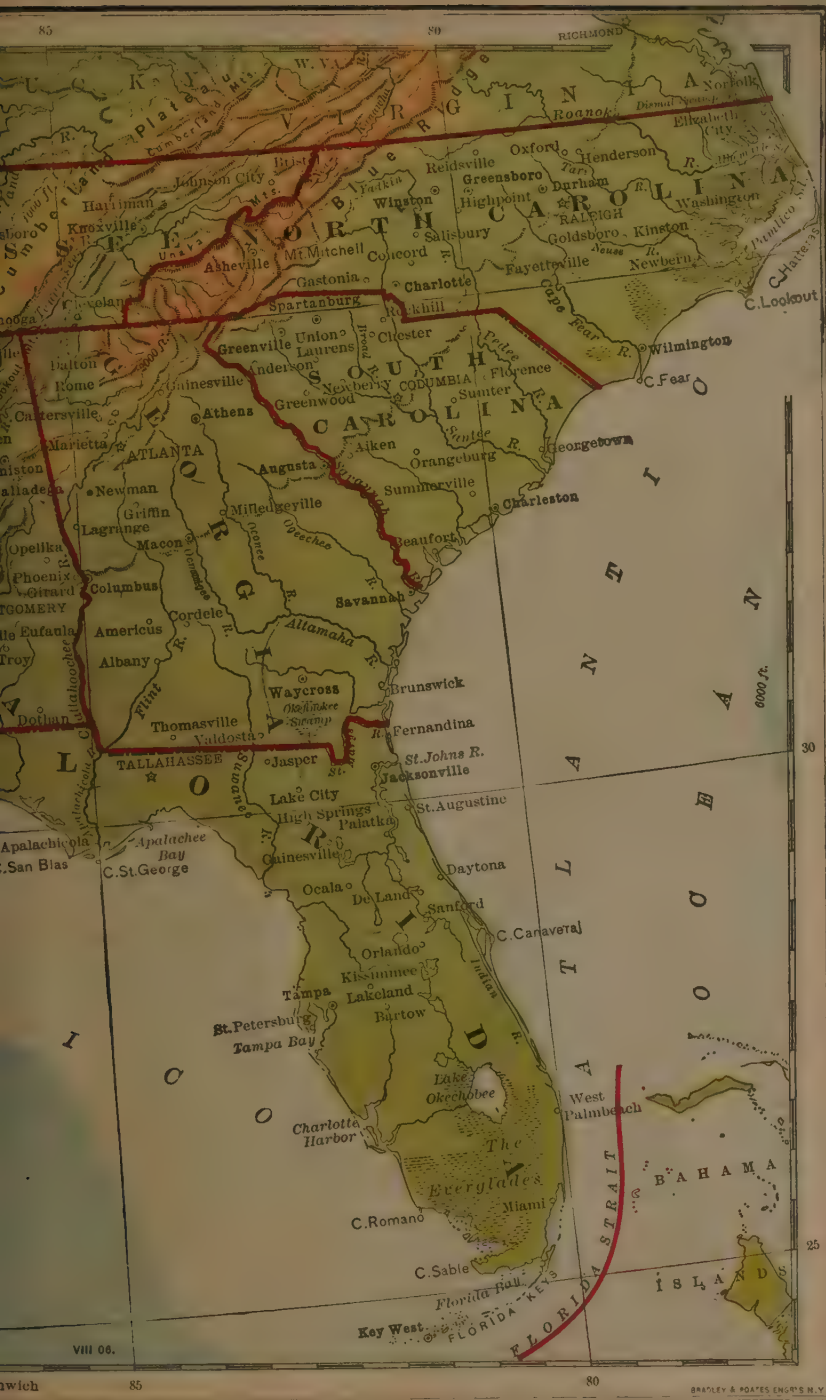
Near the coast the surface of this section is rather flat; then occur the low Piedmont hills in the east, and gently rolling plains in the west. The surface is rugged only near the Appalachian and Ozark ridges and near the mountains in the extreme west. The soil, though sandy toward the coast, is generally very fertile.

Long, hot summers and short, temperate winters prevail over nearly the whole of the section (map, p. 47).

Although snow sometimes falls in every state, it soon melts. Over nearly the whole section the rainfall is abundant for purposes of farming. It is only in the extreme west that serious droughts occur.

Agriculture is the great industry, and cotton is by far the most important crop (map, p. 51), one fourth of the farm land being devoted to its cultivation. This section is the world's greatest cotton-producing region.

Most of the ordinary or "upland" cotton is grown in a broad belt lying about one hundred miles from the coast, and stretching from Texas to North Carolina, with extensions up the valleys of the larger rivers. The finest cotton, however,—that with the longest and toughest fiber,—comes from the sea islands along the Atlantic coast.



Corn is grown in nearly all parts of the section except in the extreme west, and, with sweet potatoes, it is the chief food crop. In the northern part much tobacco and some wheat are raised; in the southern part, sugar cane, rice, and oranges. The peach crop of the section is very large. Hogs are raised in most parts of the section, fine horses in the north, and many cattle in the west.

In the northern part of the section, especially in the valleys of the Appalachian and Ozark Mountains, are extensive forests of oak, hickory, ash, poplar, and cottonwood (map, p. 52). The forests of the coast plain are composed chiefly of yellow or southern pine. These forests yield valuable building lumber; and from the abundant sap of the pine trees are made great quantities of naval stores — pitch, rosin, and turpentine.

Coal is extensively mined in the Appalachian and Ozark regions of this section (map, p. 52), and the southern end of the Appalachians has become a great iron-mining district.

From the city map on p. 53, how do you think this section compares with the northeastern quarter of the country as a manufacturing region?

Formerly nearly all the labor in the Southern Section was done by negro slaves, who could do farm work, but had not been trained to manage machinery; so very little manufacturing was then done in the South, nearly all the manufactured goods used there being brought from abroad or from the North in exchange for raw cotton. Since the negroes were freed, however, many white people have turned their attention to manufacturing and mining, which have now become important industries in the South.

The manufacture of cotton cloth is rapidly increasing, especially in the eastern part of the section; and the extraction of oil from cotton seed has become an important industry in the central and west central parts. Sugar is made in the Mississippi delta; iron and steel are manufactured in the iron-mining region; and there are many sawmills in the forest regions, and turpentine distilleries in the great pineries of the Southeast.

The coast of nearly the whole section is fringed with barrier beaches (§ 66, p. 17), and many of the inlets are narrow and obstructed by shifting bars. In consequence foreign commerce has not been greatly developed, though much cotton and some grain, coal, and lumber are exported, and there is an active coasting trade in small vessels.

The railroad map (p. 53) shows that the railroads of the section are separated by the Appalachian Mountains into two groups. These two groups are connected by several lines which cross the Appalachians or pass around their southern end. Each group, however, indicates the chief routes taken by trade in its region: the Atlantic plain trading mostly with the northeastern part of the country, but the Southwest and lower Mississippi valley mostly with the great central prairie region.

From the population map (p. 49), tell how the density of population in this section compares with that in the northeastern quarter of the country. The Southern Section contains about one fourth of the people in the United States. There are not many foreigners; but about one third of the people are negroes, and in several of the states the negroes are more numerous than the whites.

North Carolina. What states border North Carolina? To what two slopes does its drainage belong? Trace the Fall line between the Piedmont and Tidewater regions (p. 43). Name the principal rivers. Name two mountain ranges; a mountain peak. Locate the chief sounds; three capes. What part of the state is swampy? Locate the capital; a city near the coast; five other cities.



MAKING ROSIN, SOUTH CAROLINA.

The forest-covered mountains of the western part of the state yield valuable hardwood lumber. In the Piedmont region corn, cotton, tobacco, and wheat are raised. Much of the Tidewater region is swampy or covered with open pine forests, where turpentine and rosin are produced. Rice, peanuts, sweet potatoes, and early vegetables are important crops in the light sandy soils of this region.

The manufacture of cotton is increasing rapidly, the mills already consuming more cotton than is raised in the state. Other important industries are the manufacture of lumber, tobacco, flour, and cottonseed oil.

Charlotte is a great cotton-manufacturing center. *Wilmington*, an important cotton market, is the chief seaport of the state, from which great quantities of lumber and naval stores are shipped. *Raleigh*, on the Fall line, has important cotton mills and tobacco factories. *Asheville*, the commercial center of the western part, is a famous health resort. *Durham* has large tobacco factories and cotton mills. *Winston* and *Greensboro* have tobacco factories.

South Carolina. Between what two states is South Carolina? What river separates it from Georgia? Describe the surface. Which are its two largest rivers? Locate the capital; the other chief cities.

More than one third of the cultivated land of South Carolina is devoted to cotton. The swampy Tidewater region yields much rice, the state ranking fourth in the Union in this product. The cultivation of early fruit and vegetables for the Northern markets is an important industry. From the pine forests lumber and naval stores are obtained. Phosphate rock, much used as a fertilizer, is dug in the Tidewater region. Cotton weaving, lumber milling, rice cleaning, and making fertilizers and cottonseed oil, are the chief manufacturing industries.

Charleston, one of the leading cities of the South, owes its prosperity largely to its fine harbor. The first engagement of the Civil War took place at Fort Sumter

in this harbor. Much cotton, rice, lumber, and fertilizers are shipped from this port.

Columbia, the capital, is on the Fall line. Its fine water power is used by several large cotton factories. *Greenville* and *Spartanburg* manufacture cotton cloth.

Georgia. What states border Georgia? What rivers form part of the boundary? What are the chief rivers of Georgia draining the Atlantic slope? the Gulf slope? What part of the state is drained by the Mississippi system? Trace the divides of these three slopes. Where is Okefinokee Swamp? Locate the capital; the other chief cities.

Georgia, one of the leading cotton-growing states, also produces large crops of corn, sweet potatoes,



INTERIOR OF TOBACCO FACTORY, NORTH CAROLINA.

peaches, and melons, besides some sugar and rice. The pine forests yield much lumber, and more turpentine and rosin than any other region in the world. There are valuable quarries of marble and granite in the north. Georgia is a leading state in the production of marble. There are coal and iron mines in the mountains of the north. The fine water powers along the Fall line give Georgia a high manufacturing rank among the Southern states. The chief

manufactures are cotton, lumber, flour, naval stores, and cottonseed oil.

Atlanta, the capital, has grown rapidly and is one of the greatest commercial cities and railroad centers of the South. It owes its prosperity largely to its location near the southern end of the massive Blue Ridge, where communication is easy with the North and with both the eastern and the western group of Southern railroads. It has cotton mills and many other manufactories.

Savannah was the first place settled in the state. Though eighteen miles from the ocean, it has one of the deepest harbors on the Southern coast. The first steamship to cross the Atlantic sailed from this port. Savannah ships much cotton, rice, and lumber, and more naval stores than any other port in the world.



SHIPPING COTTON, SAVANNAH, GA.



STEEL WORKS, NEAR BIRMINGHAM, ALA.

Augusta, Macon, and Columbus, on the Fall line, have many cotton mills. *Athens* is an educational center and an important cotton market. *Waycross* has an extensive trade in lumber and naval stores.

Florida. What states border on Florida? What waters? Name its chief bays; capes; rivers. Trace the main divide. Which slope embraces the greater part of the state? Locate the capital; the four chief cities.

The surface of Florida is everywhere low and flat, and the sluggish streams have numerous lakelike expansions. The southern part of the peninsula has been formed by additions to the mainland of successive lines of coral reefs, or *keys*, that grew up in the warm, shallow water along the coast (§ 67, p. 18). This part of the state is even now mostly a great marsh called "the Everglades."

The raising of early vegetables and fruits, especially oranges, is an important industry. The manufacture of cigars, lumber, and naval stores is also important. Phosphate rock is mined and exported. The mild climate has made the state a favorite winter resort for invalids.

Jacksonville, the business center of the state, exports lumber and oranges, and is a popular winter resort. *Pensacola* is engaged chiefly in shipping lumber. *Tampa* is an important shipping point for southern Florida and has cigar factories. *Key West*, the most southerly city in the Union, manufactures cigars from Cuban tobacco, and exports sponges.

St. Augustine is the oldest town in the United States, and contains fine hotels for winter guests.

Alabama. Bound Alabama. Trace the main divide of the state. What rivers drain most of the southern slope? Into what bay do they flow? What river drains the northern slope? Into what does it flow? Locate the capital; the other chief cities.

Southern Alabama is a flat region of pine forests, where lumbering is the chief industry. The central and northwestern parts are rolling or hilly, and produce cotton, corn, and other crops. Among



A LOAD OF COTTON, VICKSBURG, MISS.

the Appalachian ridges of the northeast more coal is mined than in any other Southern state, and more iron ore than in any other state except Minnesota and Michigan. Iron and steel can be made there so cheaply that Alabama has become the fourth state in the Union in their manufacture.

Birmingham and *Anniston* are in the mining region, and have many iron furnaces and rolling mills. *Mobile*, at the head of Mobile Bay, is the oldest city in the state. It is a great cotton-shipping port, and has large lumber mills. *Montgomery*, the capital, is an important trade center. *Selma* has a large trade in cotton.

Mississippi. What states border Mississippi? What water boundaries has it? What river in the western part of the state is really a large bayou (§ 53) of the Mississippi? By what river is the extreme northeastern part drained? Locate the capital; the chief cities.

The broad, low flood plain of the Mississippi includes all the part of the state between that river and the Yazoo, and is one of the most fertile regions of the Union. The uplands farther east are also very fertile. More than half the land under crops in Mississippi is devoted to cotton raising. Lumbering is also an important industry in the south. On the Gulf coast are several seaside resorts.

Meridian is the commercial center of eastern Mississippi. *Jackson*, the capital, is a commercial center, and has a large cotton trade, cottonseed oil mills, and other manufactories. *Vicksburg* is noted for its large shipping trade in cotton. *Natchez* ships much cotton.

Tennessee. What states border Tennessee? What is its western boundary? its eastern? What plateau crosses the state? This is one of the Allegheny plateaus. What tributaries of the Ohio cross the state? Compare the slopes of the eastern and western parts of the state as indicated by these rivers. Locate the capital; the chief cities.

Tennessee is divided into three regions by the Tennessee river and the Cumberland plateau. Cotton growing is confined chiefly to the low western region. Much corn, tobacco, wheat, fruit, vege-



ORANGE TREE, FLORIDA.



BOILER SHOP, CHATTANOOGA, TENN.

tables, and fine stock are raised in the beautiful farming region of middle Tennessee. East of the plateau lumbering and the mining of coal and iron are important industries. Beautiful variegated marble is quarried in east Tennessee, and phosphate rock in middle Tennessee.

Tennessee is one of the leading Southern states in the production of flour, lumber, iron and steel, tobacco, and cottonseed oil.

Memphis is situated on a bluff overlooking the Mississippi River, high above the floods that are common in this part of its course. Because of its safety from overflow, Memphis rapidly grew to be an important river port, and since the building of a great railroad bridge here across the river it has become an important railroad center. It has a large trade in cotton, and many machine shops, and is an important manufacturing center for lumber and cottonseed oil.

Nashville, the capital, was founded at a salt spring where wild game came to lick the salt-incrusted rocks. From a famous hunting post, it soon became an important trading point because of its river route to the lower Mississippi and the upper Ohio. With the building of railroads it became an important commercial city. Flour and fertilizers are among its manufactures.

Knoxville, the trade center of eastern Tennessee, has foundries, rolling mills, and flour mills. *Chattanooga* is in the region where coal and iron ore are mined, and manufactures iron and steel. Being near the gorge which the Tennessee River has cut through the Cumberland plateau, it has become an important railroad center. *Jackson* is the center of a considerable trade.

Arkansas. Bound Arkansas. What great tributary of the Mississippi flows through it? Name the mountains. In what direction does the state slope? Locate the capital and other chief cities.

Nearly one half of the state is occupied by the broad flood plains of the Mississippi and Arkansas rivers, and these produce great crops of cotton, corn, rice, and peaches. From the forest-covered uplands valuable hardwoods are ob-

tained. Cottonwood and cypress grow in the lowlands. Coal and fine sandstone for whetstones are obtained from the rock folds in the western part of the state. South of the Ozark ridges, in the region of folded rocks, occurs a group of very celebrated hot springs.

Little Rock, the capital, has manufactures of cottonseed oil and lumber. *Fort Smith* is the center of the coal region. *Pine Bluff*, on the bluff forming the western margin of the great Mississippi flood plain, is a shipping point for cotton and lumber. *Hot Springs*, a town of hotels, is a famous health resort.

Louisiana. What states border on Louisiana? What waters? In what general direction does its surface slope? What is the largest tributary of the Mississippi in the state? What bayou flows to the Gulf from near the mouth of the Red River? Because of this bayou the



SUGAR WORKS, LOUISIANA.

mouth of the Red River is sometimes said to be the head of the Mississippi delta. What lake or arm of the Gulf is in the southeastern part of the state? Locate the capital; the chief city; one other city.

Fully half of the state lies in the low flood plains of the Mississippi and Red rivers. These are protected from overflow by levees (p. 45) and produce great quantities of sugar cane and rice—far more of each than is produced in any other state. Much of the uncultivated surface is covered with canebrakes and swampy forests. Cotton growing is confined largely to the uplands. Petroleum and large quantities of sulphur are obtained in the southwestern part of the state. The chief manufactures are refined sugar, lumber, and cottonseed oil.

New Orleans, the largest city of the South, is on the Mississippi River, about one hundred miles from its mouth. Ocean vessels ascend to the city to receive the cotton, wheat, and other freight that comes down the river or by rail from all parts of the Mississippi valley.

Owing to these unrivaled natural advantages for commerce, New Orleans has become one of the great cities of the country and one of the greatest cotton-shipping points



SAWMILL, ARKANSAS.

in the world, in spite of certain disadvantages of location. Most of the city between the river and Lake Pontchartrain is so low that, to protect it from overflow, it is surrounded by levees, over which the drainage and sewage is pumped into Lake Pontchartrain.

Sailing vessels reach the heart of the city by the lake and canals, but steamers generally use the river, especially since the deepening of one of the river mouths by means of artificial banks called *jetties*.

Much sugar is made and refined in New Orleans.

The city and the state were settled by the French, and many descendants of these settlers still live there and speak the French language.

Shreveport is a cotton market. *Baton Rouge*, the capital, is built on a bluff above the river.

Texas. Bound Texas. Describe the surface and its general slope. Trace through the state the divide of the Mississippi basin. Mention three rivers south of this divide. How does Texas rank among the states of the Union in area? (map, p. 50.) Describe the coast. Name the bays. Locate the capital; five cities in the south; three cities north of the capital; one city in the west.

Texas is by far the largest state in the Union. Its surface in general is a smooth slope, descending from the dry plateau and mountain ranges of the extreme west.

The warm, moist lowlands have valuable forests and rich petroleum fields, and produce sugar cane and rice, and more cotton than any other state. The higher, cooler, and drier central prairie region produces wheat, corn, and fruit; and on the pastures of this region and of the Great Plains farther west are raised great numbers of cattle, horses, mules, and sheep. Texas is one of the great manufacturing states of the South; lumber milling, flour milling, and the making of cottonseed oil being the chief industries.

Many of the people of Texas are of Spanish-Mexican descent.

San Antonio is a great market for live stock, wool, and hides, and a growing health resort. *Houston* is an important railroad and commercial center in the southern part of the state, as also are *Dallas* and *Fort Worth* in the north. *Galveston*, the chief seaport, is one of the greatest cotton shipping points of the world. *Austin*, the capital, *Waco*, and



SHIPPING COTTON, HOUSTON, TEX.

Laredo are important trade centers. *El Paso* is a railroad center and a health resort. *Beaumont* is in the center of the oil region.

Oklahoma. Bound Oklahoma. What river crosses the state and receives most of its drainage? What river forms part of its southern boundary? Describe the surface and its general slope, in comparison with that of Texas. Locate the capital; three other cities.

Oklahoma was the last state in the Union to be settled by white men. For more than half a century this region was called Indian

Territory, and was set aside as a home for Indians removed from other parts of the country. About one fifth of the Indians of the United States now live in Oklahoma, mostly in the eastern part of the state; many of them are civilized and progressive citizens. It was in 1889 that the first part of Oklahoma was opened to white settlers, and since then the population has grown very rapidly. There are now about as many negroes as Indians, and more than ten times as many whites.

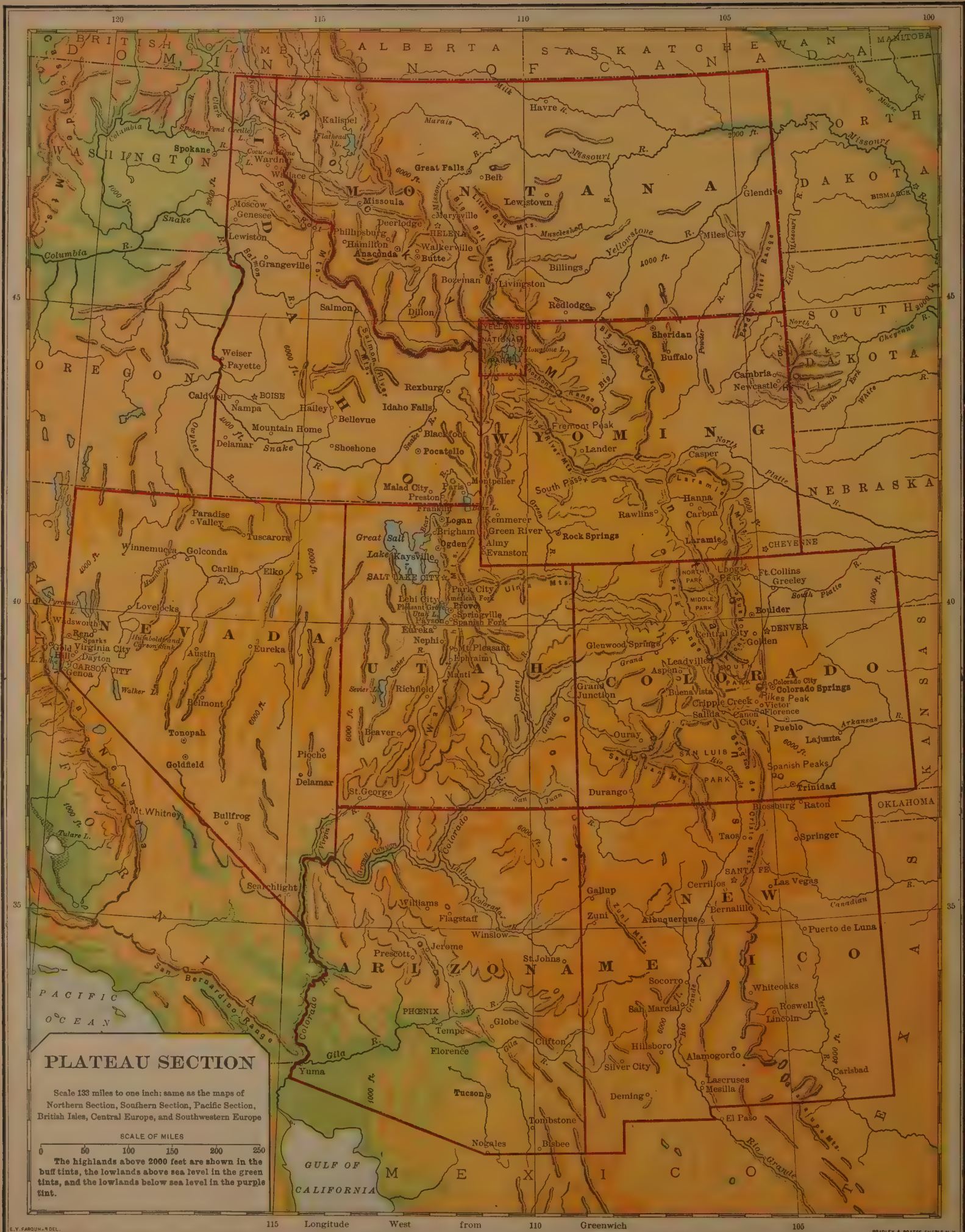
Most of Oklahoma is an undulating plain which gradually increases in elevation towards the west; but in the south and east there are some low mountains. The soil is very fertile and produces large crops of corn, cotton, wheat, and fruit. Stock raising is carried on extensively. Flour and cottonseed oil are the chief manufactures. Bituminous coal and petroleum are obtained in the eastern part of Oklahoma, and granite in the southwest.

Oklahoma City, the capital, is an important trade center. *Muskogee*, *Tulsa*, and *McAlester* are leading cities in the coal and oil regions.

Supplemental Work. Read chapters 14-20, "Carpenter's Geographical Reader, North America." Describe, as fully as New Orleans is described, one other city or place in this section.



CATTLE RAISING, OKLAHOMA.



THE PLATEAU SECTION

Which states of the Plateau Section are crossed or bordered by the Rocky Mountains? Which states lie partly in the Great Plains? Which states lie partly in the Columbia plateaus? (map, p. 42.) Which lie partly in the Colorado plateaus? Which lie partly in the Great Basin? Which half of the Union embraces this section? How does the rainfall in this section compare with that in the eastern half of the Union? (map, p. 48.)

This is the highland section of our country. In general the surface is about a mile high, but the mountain ranges and many of the plateaus are much higher. Practically the only lowland in the section is in the extreme southwest.

The Rocky Mountains extend from northwest to southeast through the central part, making this the most rugged part of the United States. Except in the extreme north and south, the lowest passes across this chain have an elevation greater than the highest points of the Appalachian Mountains, and very many of the peaks reach heights of over two miles, where it is too cold for vegetation to grow.

East of the mountains the section embraces a wide belt of the smooth, but elevated surface of the Great Plains. West of the mountains the plateau surface is much broken by deep canyons, by lines of cliffs many miles in length, and by numerous detached mountain ranges formed by tilted blocks (p. 46). Between these ranges, cliffs, and canyons, however, the plateaus are smooth and nearly level.

On the highland the summer days are usually hot, but because of the elevation the nights are cool. The winters in the north are long and very cold, but in the lowland of the south they are mild and almost snowless. In summer this lowland is one of the hottest parts of the United States.

Only on the mountain slopes and on the highest plateaus is there enough rainfall to support forest growth. Elsewhere the section is so dry that irrigation is necessary for successful farming. Much of the section, how-

ever, is covered with coarse grass, but in the Great Basin and southward are large desert tracts.

By far the most important industry is the mining of the metals silver, gold, copper, and lead. This section is one of the great silver-mining regions of the world, and it produces more than half of the gold, copper, and lead mined in the United States. Much of the lead is obtained from the silver ore. Enough coal to supply the wants of the section is mined from numerous small coal fields (map, p. 52).



PETTIT LAKE IN IDAHO.

Next to mining, herding is the most important industry. Large flocks of sheep pasture both on the Great Plains and on the high plateaus west of the Rocky Mountains. About half of the wool produced in the Union comes from this section. Herds of cattle also find pasturage on the Great Plains, and many are shipped east to be converted into beef.

Farming is confined mainly to lands that can be irrigated, either in the larger river valleys or where the waters from mountain streams can be led over the land. On such lands hay, grain, vegetables, and fruit are produced. In many parts of this arid region the Federal Government is building irrigating works.

On the lower slopes of the mountains, where there are forests, some lumbering is carried on.

The population of the section is very sparse (map, p. 49). There are not so many people in this whole section as there are in any one of a number of single states in the eastern half of the country.

About one fourth of the Indians in the United States live in this section, and yet there are many more whites than Indians. The Indians live on *reservations* which the government has set apart for them, and within which no one else is allowed to settle.

Few railroads are necessary in a region so sparsely populated, and most of these are parts of transcontinental lines which connect the railroad systems of the East with the Pacific coast (map, p. 53).



INDIANS OF THE GREAT PLAINS.

Montana. Bound Montana. What part is most mountainous? Trace the continental divide across the state. What two great rivers are east of the divide? What two rivers are west? To what are they tributary? What lake is in the northwest? Locate the capital; the other chief cities.

Montana is one of the large states of the Union. It is a leading state in the production of copper, and also in the number of sheep raised and the amount of wool that is clipped. The copper and much gold and silver are mined in the mountains. The great sheep ranges lie east of the mountains, where cattle are also raised; and hay, wheat, and oats are grown on extensive irrigated regions.



COPPER MINE, MONTANA.

Butte, the chief commercial city, is one of the great copper-mining centers of the world. At *Anaconda*, a few miles distant, are vast works for the reduction of copper ore. *Great Falls* has large smelting works and is an important wool-shipping point. *Helena*, the capital, is in the mining region.

Idaho. What states and country border Idaho? What river drains the southern part? What rivers drain the northern part? What part is mountainous? Locate the capital.

Mining is very important. Idaho has become one of the great lead-producing states in the Union; the yield of silver and gold is also large. In the north the rainfall is sufficient for the growth of wheat in the valleys and for fine forests on the mountain sides, so that both agriculture and lumbering are carried on. There are extensive irrigated regions in southern and southwestern Idaho. *Boise* is in an excellent grazing region.

Wyoming. What states border Wyoming? Trace the continental divide through the state. What three river systems have headwaters in this state? What are the chief mountain ranges? Name the capital; three other cities. Locate the Yellowstone Park.



SHEEP READY FOR SHEARING, WYOMING.

Wool growing and coal mining are the chief occupations, though many cattle are also raised. Wyoming is the only state in the section where coal mines are more important than the mines of the metals. Yet silver and copper ores are smelted along the transcontinental railroad which crosses the southern part of the state.

Cheyenne and *Laramie* are railroad towns and important collecting and distributing centers. *Sheridan* and *Rock Springs* are in the coal regions.

The **Yellowstone National Park** has been reserved from settlement by the Federal government. It contains the most wonderful geyser region in the world. There are also hundreds of hot springs whose basins are composed of beautifully colored mineral deposits from the cooling waters (§ 43, p. 13). Besides these there are several lakes, the Great Falls and canyon of the Yellowstone River, and many lofty mountain peaks. The park is visited every year by travelers from all parts of the world.

Colorado. Bound Colorado. Trace the continental divide across the state. Name four mountain ranges. Locate four "parks" among the mountains; three mountain peaks. What great rivers have headwaters within the state? Locate the capital; the other chief cities of the state.



IN A COLORADO GOLD MINE.

Colorado is the oldest state in the section and contains the largest population. It is one of the great silver-producing regions in the world, and it ranks as the first state in the Union in the production of gold and of lead. There are also valuable coal mines, and petroleum and iron ore are produced. Considerable crops of hay, wheat, fruit, and garden produce are raised, chiefly east of the mountains, and herding is important in the "parks." Many invalids resort to Colorado because of its dry, pure air.

Denver is the receiving and distributing point for a wide mining and herding region. It is the chief railroad center of the state, and the largest city of the



BEET SUGAR FACTORY, UTAH.

section, having grown very rapidly since the discovery of gold in Colorado, just before the Civil War.

Pueblo has easy access by way of the Arkansas canyon into the silver- and lead-mining region in the mountains, and is also convenient to regions where coal, iron ore, and petroleum are obtained. It has smelting works, rolling mills, and machine shops. *Colorado Springs* is a great health resort. Near by is the beautiful "park" called the Garden of the Gods. *Trinidad* has agricultural and coal-mining interests. *Boulder* is a mining center.

Utah. Bound Utah. What mountain range traverses the center of the state? What river drains the eastern half of the state? What large lake is in the state? What is the history of this lake? (p. 46.) Locate the capital; three other cities.

West of the Wasatch Mountains the state lies in the Great Basin and part of it is desert, but in the valleys along the west base of the mountains considerable crops of hay, grain, and vegetables are raised by irrigation. Much wool is also produced. The lead-silver mines make Utah one of the great lead-producing states. Flour and beet sugar are manufactured.

Salt Lake City is the business center of the state. Water from the mountains is led through the city in pipes and open ditches. *Ogden* is a railroad center on a transcontinental line. *Provo* and *Logan* are trade centers of fertile irrigated regions.

Nevada. Bound Nevada. What parts of the state are drained by rivers flowing into the Pacific? What becomes of most of the streams in the state? Name the chief lakes. Which have no outlets? Locate the capital; three other cities.

Nevada lies chiefly in the Great Basin, and much of it is arid and desert land. Only along the valley of the Humboldt River, and in

some of the mountain valleys, is agriculture carried on. Gold, silver, and lead are mined.

Reno, on a transcontinental railway, is the commercial center. *Goldfield* and *Tonopah* are mining centers.

New Mexico. Bound New Mexico. Trace the continental divide through it. What river system drains the west? What large river crosses from north to south? What rivers are east of the Rio Grande? Locate the capital; another city.

The chief industries of New Mexico are the herding of sheep and cattle, and copper and lead smelting. Coal, gold, and silver also are mined.

Many of the people are of Spanish descent and still speak the Spanish language. There are also many In-



PUEBLO, NEW MEXICO.

dians, among them several tribes of pueblo Indians, each of which builds its village or "pueblo" as a single great building, made of sun-dried brick. The pueblos are often several stories high.

Albuquerque, the largest city, is a railroad junction. *Santa Fe* was founded in 1582, but it was a thriving pueblo long before white men came to America.

Arizona. Bound Arizona. Name the principal streams. What part is lowland? Where is there a strip of lowland in the northern part? Locate the capital; another city.

The lowlands of Arizona are the driest and hottest part of the United States, though parts of the region produce excellent fruit and semitropical plants by the aid of irrigation. In the highland region copper mining is the most important industry, and Arizona is now one of the leading copper-producing states.

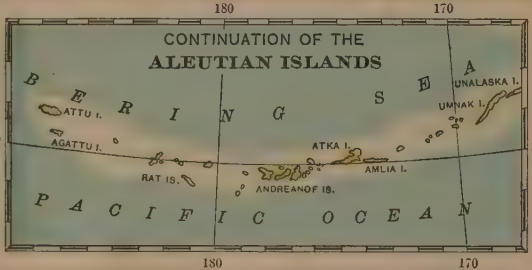
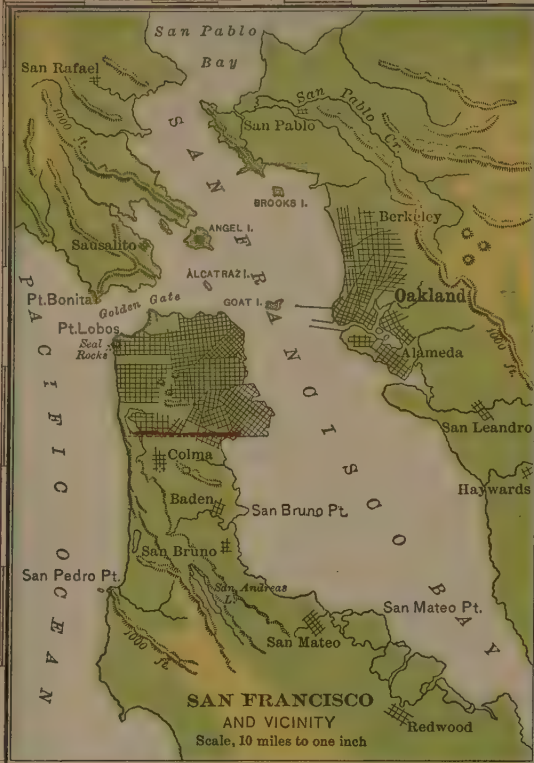
Many of the people are of Spanish descent, and there are more Indians than in any other division of this section.

Tucson is a mining center and contains works for the reduction of gold, silver, and copper ores. *Phoenix*, the capital and commercial center, is in a well-irrigated region.

Supplemental Work. Read chapters 24 and 31 of McMaster's "School History of the United States"; chapters 33-37, 42, 43, "Carpenter's Geographical Reader, North America"; "Through the Grand Canyon," in McGuffey's "Alternate Sixth Reader." Describe one city or scene in the Plateau states.



INDIANS OF ARIZONA.



THE PACIFIC SECTION

What three states compose this section? What great mountain ranges traverse its central part? What part of the region receives ample rainfall? (p. 48.) What parts are dry?

The eastern part of the Pacific Section is on the high plateau bordered by the Sierra Nevada and the Cascade Mountains. These ranges are about as high as the Rocky Mountains, but they seem much higher and grander when viewed from the west, because on that side they rise from broad lowland valleys. Between these valleys and the Pacific are the low Coast Ranges.

Among the deep gorges and canyons in the western slope of the Sierra Nevada, the Yosemite valley is especially noted for its magnificent scenery. The Cascade Mountains are noted for their high volcanic cones. The higher peaks of both ranges reach the limit of perpetual snow, and their upper valleys contain small glaciers.

West of the Sierra Nevada and Cascade ranges there is not a great difference between summer and winter temperatures. The rainfall occurs in the winter months. In the north it is heavy, but in the south there is so little rainfall that irrigation is necessary for crops in many localities. Along much of the coast chilly and foggy weather is common, but south of Point Conception the weather is delightful throughout the year.

East of the Sierra Nevada and Cascade ranges the summers are hot and the winters cold. In the Columbia valley there is enough rainfall for farming, but southward there is hardly any rainfall.

Agriculture is the principal industry in the valleys west of the great mountain ranges. Wheat is grown on the bottom lands, and grapes and other fruits on the foothills. Much wheat is also raised east of the Cascade Mountains in the Columbia valley. Great quantities of barley and hops are also grown in this section. In the drier regions, and on the mountain slopes, cattle and sheep raising is an important occupation. The wool clip of this section is very large.

The forests (map, p. 52) are the heaviest in the United States. Those in the central part of the section are composed chiefly of great redwoods, while farther to the north the Douglas fir or "Oregon pine" is the most valuable tree. In these regions lumbering is a great industry.

Gold mining is extensively carried on in the west slope of the Sierra Nevada, which is one of the richest gold fields in the world. Some of the gold is obtained in fine grains among the other rock waste deposited by mountain streams in their flood plains, but most of the gold is mined directly from veins in solid rock. Much quicksilver is mined in the central part of this section, and

considerable coal in the north. The oil fields in southern California produce vast quantities of petroleum, which is much used for fuel.

Although the population, especially in the great valleys, is greater than on the Rocky Mountain highland, the section is still thinly settled. The whole section does not contain so many people as the city of New York. About one fifth the people are foreigners, mostly British, German, Italian, and Chinese.

The section is traversed by railroads from north to south along the line of the Sound, Willamette, and California valleys (map, p. 53). The most important railroads which enter the section, however, are the great transcontinental lines which cross the Rocky Mountain highland from the Mississippi valley.

The coast is closely bordered by the Coast Ranges, and has few bays and harbors. The ranges are broken in the north, however, by Puget Sound and the Columbia River, and in the central part by the Bay of San Francisco. These indentations afford safe harborage to the largest vessels, to them the railroads converge, and from them the foreign commerce of our Pacific coast is carried on.

LUMBERING, WASHINGTON.

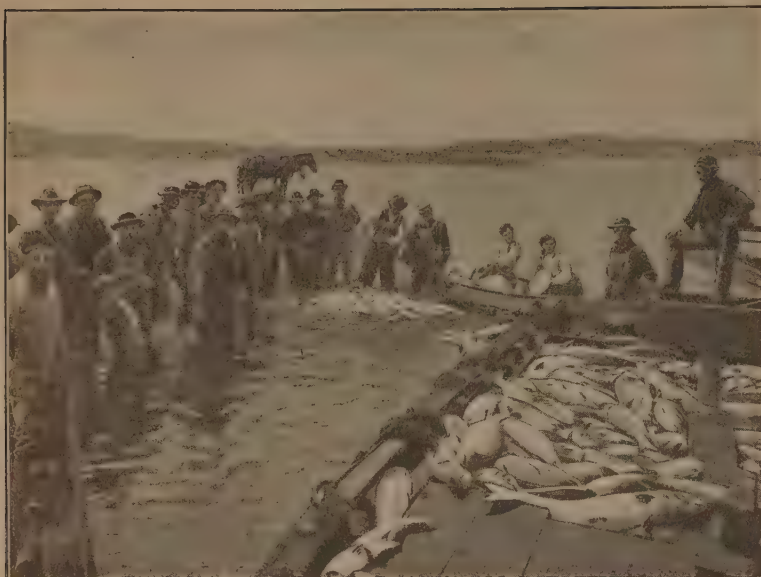


WHEAT READY FOR SHIPMENT, WASHINGTON.

Washington. Bound Washington. What parts of the state lie in the Columbia valley? What sound is in the northwestern part of the state? By what strait is it joined to the Pacific? What part of the state is mountainous? Locate the capital; four other cities in the west; two in the east.

West of the Cascade Mountains the state is well covered with forests, which are its chief wealth. The largest lumber mills in the world are along Puget Sound. The fertile farming lands in the Sound valley and east of the mountains yield large crops of wheat, hops, and fruit. Coal is mined in the north more extensively than elsewhere in the section. The salmon fisheries of the Columbia River and Puget Sound add much to the wealth of the state.

Seattle, the commercial center, is in the coal and lumber region. It has an extensive commerce with Asia and is the terminus of transcontinental railroads. *Spokane* has excellent water power. *Tacoma* has a fine harbor. *Everett* and *Bellingham* manufacture lumber. *Walla Walla* is in a rich grain and fruit region.



SALMON FISHING, OREGON.

Oregon. By what is Oregon bordered? Name its three mountain ranges. How does eastern Oregon compare with eastern Washington in elevation and slope? What part of the state is dry? How does the map indicate this? Name the capital; one other city on the Willamette; one at the mouth of the Columbia.

Magnificent forests of Douglas fir cover much of the western half of the state, and lumbering is an important industry. In the fertile Willamette valley great quantities of hay, wheat, oats, hops, and fruit are raised, and much fine wheat for export is grown by the aid of irrigation in northeast Oregon. The wool clip is large, and many cattle are raised. Gold mining is carried on chiefly in the mountains of the southwest and the northeast. The Columbia River salmon fisheries of Oregon are among the most valuable in the world.

Portland, one of the large cities in the Northwest, manufactures lumber, flour, and packed meat. Steamers ascend the Columbia to the city, and its foreign commerce is extensive. *Salem* has woolen and flour mills. *Astoria* is the center of the salmon-fishing and -canning industry, and ships much lumber.

California. Bound California. What mountain ranges are in the state? What two rivers drain the California valley? Into what do they flow? Locate the capital; the chief city; four other cities in the central part of the state; three in the south.

California is nearly three times as large as any state of the Union east of the Mississippi River, and is exceeded in size by Texas only. It is the first state in the Union in the production of fruit, especially grapes, plums, apricots, or-



PICKING HOPS, OREGON.

anges, and lemons; and stands high in the production of hay, wheat, barley, sugar beets, hops, and live stock.

California supplies about one fourth of the gold and petroleum produced in the United States, and a large part of the world's yield of quicksilver.

Valuable lumber is obtained from the redwood forests in the northwestern part of the state. On the west slopes of the Sierra Nevada are several small groves of a kind of redwood, which contain some of the most gigantic trees in the world.

Among the chief manufacturing industries are sugar refining, fruit preserving, flour and lumber milling, ship-building, and wine making.

San Francisco, the largest city on the Pacific slope, lies on the peninsula between San Francisco Bay and the Pacific Ocean. It owes its growth chiefly to the fine harbor afforded by the nearly land-locked bay. The narrow entrance to the bay is called the Golden Gate.

The city was founded by Spanish monks from Mexico as the mission of San Francisco, and continued a small

settlement until the discovery of gold brought thousands of people to California. The place immediately became the most important commercial center of the Pacific coast.

An extensive ocean commerce is carried on with Japan, China, Australia, and the Pacific Islands, and also with Europe and the east coast of the United States. The heaviest commerce, however, is overland by the transcontinental railroads. A large part of the manufacturing of the state is cen-



DRYING FRUIT, CALIFORNIA.

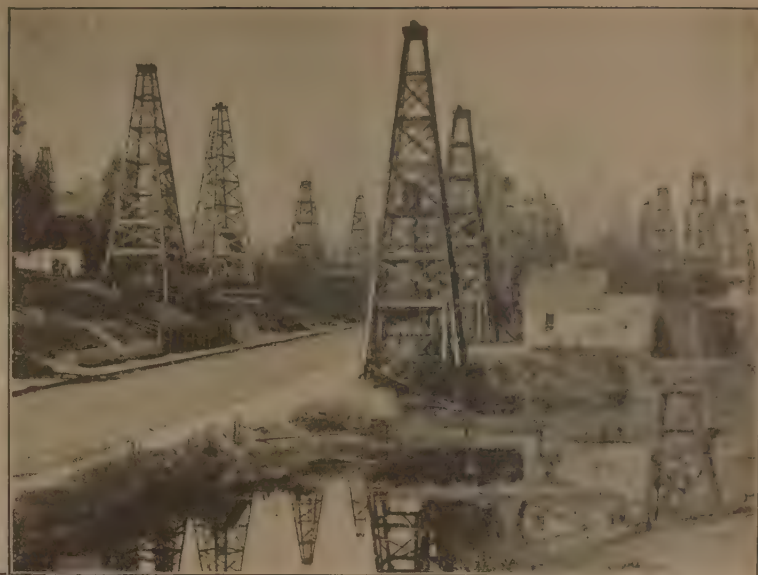
tered in this city, the chief industries being sugar refining, meat packing, and the manufacture of machinery, clothing, and flour.

Los Angeles, the commercial center of southern California, is in the orange-growing region. *Oakland*, on the opposite side of the bay from San Francisco, is a great suburb and railroad terminus of that city. *Sacramento*, the capital, is in a fertile agricultural region. The city is protected from floods by levees. *Berkeley* and *Alameda* are important suburbs of San Francisco, and at Berkeley is the University of California. *San Diego* has a good harbor. *Pasadena* is in a rich fruit-producing region. *San Jose*, *Fresno*, and *Stockton* are important trade centers.

Alaska. Where is Alaska? What country is east of it? What waters are north, west, and south? By what is it separated from Asia? What part is most mountainous? What great river traverses the country? To what nation does Alaska belong?

Alaska lies at the north-western extremity of North America, in the same latitude as southern Greenland. It is more than twice as large as Texas, but is very thinly settled. About half of the inhabitants are whites, and the rest are chiefly Indians and Eskimos.

The southern coast is very rough and mountainous. Some of the peaks are over three miles high, and one of them is the highest in North America. These mountains prevent the warm, moist winds of the Pacific from reaching the interior, which is therefore very cold during most of the year. Part of the interior is covered with open forests, but much of it is a bleak tundra (§ 101, p. 24). The southern slopes of the mountains are much warmer, receive abundant rains, and are covered with forests. The summits of the mountains are always



PETROLEUM WELLS, LOS ANGELES, CAL.



CANNING FRUIT, CALIFORNIA.

snow-clad. Great glaciers creep down most of the larger valleys, many of them extending to the sea, where parts of them break off and float away as icebergs (see p. 16).

Most of the people live near the southern and western coasts. The chief occupations are hunting fur-bearing animals, fishing for cod and salmon, and gold mining. Some hardy vegetables grow in the south, but the climate is too damp for grain.

Most of our sealskin garments are made from the skins of fur seals killed on or near the Pribilof Islands, which lie in Bering Sea and belong to Alaska. The sea otter, the marten or sable, the black bear, and the silver fox are also killed in Alaska for their valuable fur.

Gold is found in many places in Alaska. There are rich fields near Cape Nome and on the Koyukuk River. The Klondike gold field is in Canada, just across the Alaskan boundary, but is reached from the south coast of Alaska. Mining in Alaska is very costly and dangerous because of the long, cold winters and the scarcity of food.

Alaska belongs to the United States. It is ruled by a governor and other officers appointed by the Federal government at Washington. The chief settlements are *Fairbanks*, *Nome*, and *Douglas*, mining towns; and *Juneau*, the capital. *Skagway* is the port for trade with the mining settlements of the upper Yukon valley, which is reached by a railroad over White Pass. *Sitka*, a trade center of southern Alaska, is situated on Baranof Island.

Hawaii, Samoa, p. 149. Porto Rico, p. 94. Philippines, p. 138.

Supplemental Work. Read chapters 38-41, 44, 45, "Carpenter's Geographical Reader, North America." Describe one city in this section as fully as San Francisco is described.



GOLD MINING, NEAR CAPE NOME, ALASKA.



DOMINION OF CANADA AND NEW FOUNDLAND

Scale 330 miles to one inch, same as the maps of the United States, Mexico and Europe.

SCALE OF MILES
0 100 200 300 400 500

MARITIME PROVINCES

SCALE OF MILES
0 25 50 75 100 125 150

VIII 01.

THE ST. LAWRENCE VALLEY

SCALE OF MILES
0 25 50 75 100

COUNTRIES NORTH OF THE UNITED STATES

THE DOMINION OF CANADA

What country borders the United States on the north? What circle crosses the northern part of Canada? In what zones is Canada? Compare it with the main body of the United States in size (map, p. 40).

What great bay is in Canada? Compare it with the Gulf of Mexico in size. What archipelago is north of Canada? What strait separates the eastern part of this archipelago from the mainland? What two peninsulas are on the north coast of Canada? What gulf is east of Canada? Name the four largest islands bordered by this gulf. What peninsula is south of this gulf? What large islands are off the west coast of Canada?

From the map on p. 36 locate the highlands of Canada. Compare the widths of the western highland in Canada and in the United States. Name the principal mountain ranges. What plateau is in the east? What part of Canada is lowland? Trace the divide of the Hudson Bay slope (p. 86 and p. 36). Name the principal river basins of that slope; of the Arctic slope; of the Gulf of St. Lawrence slope. Name the chief basins of the Pacific slope. In which of the basins of Canada are there large lakes? In which are the largest lakes?

From the maps on p. 38 describe the climate and rainfall of eastern, central, and western Canada.

The Dominion of Canada occupies most of the northern part of North America, including the Arctic Archipelago, and is larger than the United States and Alaska combined. Like the United States, it has an extensive highland in the west, a smaller and less lofty highland in the east, and between them a broad central lowland. Most of the Canadian lowland slopes to Hudson Bay, as most of the lowland in the United States slopes to the Gulf of Mexico, while a part of the lowland in both countries slopes to the Gulf of St. Lawrence.

Canada being so far north, the moisture in the winds from the Pacific often falls as snow on the western highlands, and the higher mountain ranges abound in glaciers.



CANADIAN ROCKY MOUNTAINS.

Their lower slopes are covered with heavy evergreen forests, and the region is noted for its scenery. Nearly all the large rivers which rise in this region flow from the melting ends of glaciers. The Laurentian plateau is lower and smoother than the western highlands, but it is too cold and bleak for cultivation.

The northern coast of Canada is so cold that neither trees nor food plants can grow there. Farther south a broad forest belt stretches entirely across the continent. In the southern part of this belt are valuable forests of pine and other building timber. Southern Canada, though the winters are long and cold, is well adapted to wheat and the hardier plants of the temperate zone. The basin of Lake Winnipeg is the chief wheat-growing region, and the peninsula between Lake Huron and Lake Erie is a fruit and dairy region.

In the cold, uninhabited regions of the north, caribou and fur-bearing animals are abundant. The fisheries off both coasts of Canada are among the most extensive in



LOGS AND SAWMILL, VANCOUVER.

the world. Cod, herring, mackerel, and lobsters are the chief catch in the eastern coast waters, and salmon in the western.

The mineral product is important. Gold and copper are mined chiefly in the western part, and coal in both the east and the west. Silver, nickel, petroleum, iron ore, asbestos, and lead are also found.

Although Canada is larger than the United States, the population is less than that of New York state, and is confined chiefly to the southern part.

The first white settlers were Frenchmen in the St. Lawrence basin. British settlers and their descendants form the greater part of the population, and their energy has made of Canada the most prosperous part of the Western Continent, after the United States. Many descendants of the French settlers still live in the lower St. Lawrence valley. They are mainly Catholics, while the



ST. JOHN RIVER, AT ST. JOHN, NEW BRUNSWICK.

greater part of the English are Protestants. Farther west there are many "half-breeds" of mixed French and Indian descent.

In northern Canada are a few thousand Eskimos and Indians. In winter the Eskimos live along the coast, but in summer they migrate inland, where caribou are abundant. The Indians are hunters and trappers. The valuable furs which they procure are sold to the Hudson Bay Company, which has established trading posts throughout this region.

Canada belongs to Great Britain, but has a form of government something like that of the United States. There are nine *provinces*, similar to our states, each with its local government. The people of each province elect representatives to a *Parliament*, like our Congress, which makes laws for the whole Dominion. But instead of an elected president, as in our country, Canada has a governor general appointed by the king of Great Britain. The provinces are all in the southern part of Canada. Most of the northern part of the country is still a wilderness without local government.

Prince Edward Island, in the Gulf of St. Lawrence, is the smallest province. What city is its capital?

The province of Nova Scotia includes the peninsula on the mainland, and the island of Cape Breton. The fisheries are very valuable, and from this province comes most of the coal mined in eastern Canada. *Halifax*, the capital, is the chief British naval station in North America.



PARLIAMENT BUILDING, OTTAWA.

From New Brunswick lumber and cured fish are exported. *Fredericton* is the capital, and *St. John* the largest city and chief port.

Quebec is one of the oldest and most populous provinces. A large part of the population is of French descent. The city of *Quebec* is one of the oldest in North America. The upper city, on a high cliff over-

looking the St. Lawrence River, is surrounded by fortifications; the business part of the city lies along the river bank. *Montreal*, the metropolis of eastern Canada, lies at the mouth of the Ottawa River and at the head of navigation for ocean steamers on the St. Lawrence. Except when the river is blocked with ice both of these cities are great shipping points for lumber, wheat, and dairy products.

Ontario borders the Great Lakes and is the most prosperous and wealthy province. *Toronto*, an important commercial center, is the capital. *Ottawa*, the capital of the whole Dominion, is a great lumber center.

Both Ontario and Quebec contain vast forests of valuable timber, and lumbering and farming are the chief industries. Large crops of oats, wheat, potatoes, and apples are raised, and much cheese and butter are produced for export. Central Ontario has rich silver mines.

Manitoba lies in the basin of Lake Winnipeg in Canada's great wheat region. This region is mostly open prairie, and it extends westward up the broad valleys of Assiniboine and Saskatchewan rivers, through the new provinces of Sas-



A TRADING POST OF THE HUDSON BAY COMPANY.



QUEBEC.



WHARVES AT MONTREAL.

Saskatchewan and Alberta. The cheap and fertile land of this whole region is being very rapidly taken up by immigrants from all parts of Europe and from the United States. *Winnipeg*, the capital of Manitoba, is the largest Canadian city west of Toronto, and is growing rapidly. *Regina*, the capital of Saskatchewan, is a stock-raising center. *Calgary* and *Edmonton*, in Alberta, are stock-raising and coal-mining centers.

British Columbia, which borders on the Pacific, is the largest province. Gold and coal mining, lumbering, and fishing are the chief employments. *Victoria*, on Vancouver Island, is the capital. *Vancouver*, the terminus of a Canadian transcontinental railway, is the commercial center and chief seaport.

Northern Canada. The chief wealth of northern Canada is derived from the fur trade. The district of Yukon, however, is more important for the rich gold mines around Dawson in the Klondike region.

Most of the export trade of Canada is with Great Britain. The imports are largely from the United States. From Montreal, St. John, and Halifax steamship lines run to European ports, and from Vancouver there are steamship lines to Japan and Australia. From Montreal to Vancouver the Canadian government has constructed a great transcontinental railroad, which is connected by branches with the railroad system of the United States. By this road considerable traffic between Europe and Asia crosses Canada.

Newfoundland. The island of Newfoundland, together with the Labrador coast, forms a British colony by itself, and is not a part of Canada. The interior of the island is a wilderness. The chief occupation is fishing, and many of the islanders live along the coast of the mainland during the fishing season. *St. John's* is the capital.

When the French gave up Canada and Newfoundland to Great Britain, they retained the two small islands of *St. Pierre* and *Miquelon*, south of Newfoundland, which they use as fishing stations.

Supplemental Work. Read chapters 46 and 47 of "Carpenter's Geographical Reader, North America."

DANISH AMERICA

What two islands rise from the continental plateau between Europe and America? (map, p. 8 and p. 36.) Are these islands nearer to America or to Europe? Which of them is the larger?

Greenland. Nearly the whole of Greenland is covered hundreds of feet deep by a continental glacier (§ 58). It is only near the coast that the surface of the land is



HARBOR AT VANCOUVER.

not covered with ice. The jagged coast line of southern Greenland indicates a sinking coast (§ 28). Perhaps it is the great weight of the ice sheet that causes the sinking. In places the ice sheet extends into the sea, forming long ice cliffs. Icebergs broken from these cliffs are carried southward by ocean currents and at certain seasons make the navigation of the Atlantic dangerous as far south as Newfoundland.

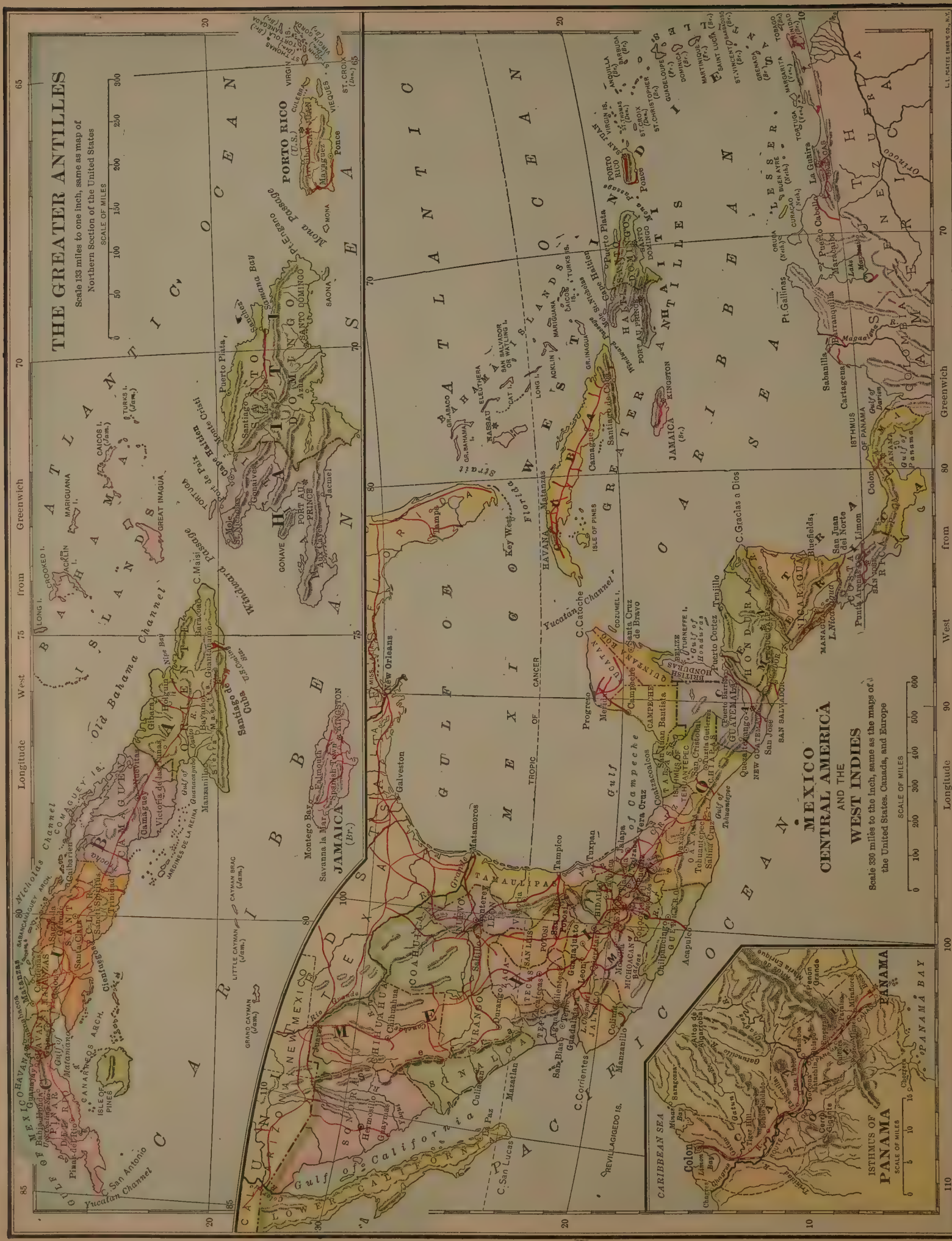
In the coast region of the south mosses and lichens grow, with patches of grass and a few flowering plants. There are also a few stunted trees, but they rarely grow higher than a man's head. The principal wild animals of the land are the musk ox, the reindeer, the arctic fox, and the polar bear. The coast waters are frequented by seals,



CANADIAN DOG TEAM.



GOVERNMENT BUILDING, VICTORIA.



walruses, whales, and fish. Millions of eider ducks and other aquatic birds nest along the coast.

But few people live in Greenland, and most of them are Eskimos. The Eskimos live in low, filthy hovels made of loose stones, or sometimes of blocks of snow and ice. They fish and hunt for sea animals, using the flesh for food, the fur for clothing, and the fat for fuel. On the southwest coast there are a few small trading settlements of white men from Denmark.



ESKIMOS IN ESKIMO BOATS.

Iceland is about as large as Kentucky. It is a rugged plateau containing many volcanoes, several of which are active and cause frequent earthquakes. Hot springs are numerous, and there are famous geysers. Parts of the island are covered with ice fields, and the deep fiords of the northern coast are often packed with ice brought in by the Arctic currents. The southern coast is much

less broken and is kept free from ice by the warm currents from the south. The climate, though raw and moist, is moderated in the south by winds from the ocean. Grass and vegetables grow well, though it is too cold for grain. There are many aquatic birds, and the coast waters abound in excellent fish.

Iceland was settled by people from Norway and Denmark long before Columbus discovered America, and their descendants still live there, chiefly in the southern part of the island. They are thrifty, intelligent, well-educated people, and are employed chiefly in raising sheep, cattle, and horses, and in fishing.

The people make their own laws; but the governor is appointed by the king of Denmark.

Supplemental Work. Read chapter 61, "Carpenter's Geographical Reader, Australia," etc.; "My Arctic Journal," by Josephine D. Peary; or "Farthest North," by Fridtjof Nansen.

COUNTRIES SOUTH OF THE UNITED STATES

MEXICO

What country borders the United States on the south? In what zones is Mexico? What waters border it? What peninsulas does it contain? From the map on p. 36 locate the lowlands of Mexico. What part of the country is highland? Name and locate the chief mountain range. Are there many large rivers in Mexico? Name one that drains a small part of the country in the northwest.

Mexico occupies the part of North America south of the United States between the Gulf of Mexico and the Pacific.

There is a strip of lowland along either coast, but most of Mexico lies on the Rocky Mountain plateau. The plateau is bordered by mountain ranges corresponding to the Rocky and the Cascade Mountains, but the western range is much higher and more continuous than the eastern. In the north the plateau is about three fourths of a mile high, but it rises gradually toward the south. In this region are many volcanoes, some active and some extinct. The volcano Orizaba is about three and one half

miles high. Earthquakes are not uncommon throughout Mexico.

Owing to the tropical position of Mexico there is little difference between the temperatures of summer and of winter; but there is a great difference in temperature of regions at different elevations. The lowlands are always hot; the plateau is always temperate; and the higher mountain peaks are always snow-clad. The seasons of Mexico are the wet and the dry. Nearly all the rain falls during the summer months. The northern part has very little rain at any time (§ 93).

Plants and animals of both the North and the South



MOUNT ORIZABA, THE HIGHEST PEAK OF MEXICO.

American regions are found in Mexico. In the lowlands mahogany, rosewood, logwood, and vanilla grow in the dense forests, and rice, sugar cane, tobacco, cotton, and fruits are cultivated, as well as the cassava, from the root of which the natives make farina meal for their bread; and Sisal hemp, or henequen, of which cordage and hammocks are made. On the lower mountain slopes coffee is cultivated,



MAGUEY FIELD, MEXICO.

and higher up are open forests of oak, pine, and other trees of the temperate zones. On the plateau grain and beans are the chief crops. Mexico exports Sisal hemp, coffee, and cabinet and dye woods.

A characteristic Mexican plant is the maguey, or "century plant," from which is made a kind of fermented drink called *pulque*. It is a species of this plant that yields the Sisal hemp.

In the drier portions of the plateau the raising of cattle, horses, and sheep is an important industry, and cattle and hides are exported.

The mines of Mexico are its chief source of wealth. Mexico is one of the great silver-producing countries of the world, and this metal and its ore form the chief exports. Copper, gold, and lead are also exported, as well as the beautiful stone called "Mexican onyx," much used for interior decoration.

The government of Mexico is modeled after that of the United States. The republic consists of twenty-seven states, two territories, and a federal district, like the District of Columbia. About one fifth of the people are white, mostly descendants of Spanish settlers; nearly one half are of mixed Spanish and Indian blood; and the



GRADING COFFEE, MEXICO.



COPPER SMELTER, MEXICO.

rest are pure Indians. Most of the land is owned by the white people. Many of the Indians are laborers in the mines, or on the stock "ranches," or farms. Nearly all Mexicans are Catholics.

Long before America was colonized by white men, the Indians of central Mexico, called Aztecs, had advanced nearly to the stage of civilization. They had formed a confederacy, and lived in pueblos built of stone; they cultivated corn by the aid of irrigation, wore ornaments of gold, and knew something of working other metals.

The manufactures of Mexico are mainly liquors, cotton cloth, tobacco, paper, and earthenware for home use.

The foreign commerce is carried on chiefly with the United States, both by sea and by the railroads which



STREET MARKET, CITY OF MEXICO.

connect the plateau region with the railroad system of the United States. An important railroad extends from the Atlantic to the Pacific coast, across the Isthmus of Tehuantepec, the narrowest part of Mexico.

Mexico, the capital and largest city of the republic, is located in the federal district. It is on the plateau in a great basin which contains several large lakes. The sewage of the city and the high-water overflow of the lakes are conveyed out of the basin by a drainage canal forty miles long, which for six miles of its length occupies a tunnel through the mountains. Railroads connect



BANANA PLANTS, CENTRAL AMERICA.

the city with the railroad system of the United States. Most of the buildings are low, and many of the dwellings are built around courtyards ornamented with flower gardens and paved with stone.

Guadalajara and *Puebla* are large and important railroad cities on the plateau. At *Puebla* are produced the most important manufactures of Mexico, among them the famous Mexican blankets. *Vera Cruz* is the chief Atlantic seaport. It is connected by railroad with the city of Mexico. The harbor is so shallow, however, that ships unload into small boats. *Guaymas* and *Acapulco* are important ports on the Pacific coast.

CENTRAL AMERICA

By what waters is Central America bordered? Which coast has the greater width of lowland? (map, p. 36.) In what direction does most of the country slope? Name the chief lake of Central America.

Central America occupies the narrow part of the continent southeast of Mexico.

The plateau here is neither so broad nor so high as in Mexico. The mountains near the Pacific coast contain active volcanoes, and severe earthquakes are frequent. The climate is similar to that of southern Mexico, but warmer and with a heavier rainfall on the north coast.

Central America is more uniformly forest-covered than Mexico, but there are large tracts of grass land in the interior. Coffee, bananas, sugar, cacao beans, rubber, hides, gold, and cabinet and dye woods are exported.

British Honduras, a strip along the west coast of the Gulf of Honduras, was settled by English logwood cutters, and is still a British colony. The rest of Central America was settled by Spaniards. It consists of six small independent republics. Name them.

There are only a few thousand people of pure Spanish descent in the Central American states. Most of these are merchants and planters, and the foreign trade is in their hands. The people of mixed Spanish and Indian blood are more numerous than the whites, but more

than half the entire population are pure-blooded Indians. Some of these are becoming civilized.

Guatemala and **Salvador** contain half the people in Central America. Name the capital of each.

What is the capital of **Honduras**? **Honduras** mahogany is specially noted.

What is the capital of **Nicaragua**?

The name **Costa Rica** means "rich coast." Coffee has been cultivated in this state for a hundred years, and bananas are exported to the United States. What is the capital?

Across the republic of **Panama** the United States controls a belt or zone ten miles wide, in which a ship canal is under construction from the Caribbean Sea to the Pacific Ocean. The completed canal will make a short water route between the east and west coasts of America. The cities of *Panama* and *Colon* (which are not included in the zone) are at the ends of the canal. They are at present connected by a railway over which is transported much foreign commerce.



WORK ON THE PANAMA CANAL.

THE WEST INDIES

What parallel of latitude crosses the central part of the West Indies? Between what bodies of water does this chain of islands lie? What strait and channel separate the chain from the mainland of North America? Measure the length of the chain, using the scale of miles. On the map of the United States (p. 50) measure the same distance west from New York city. Name the four largest islands of the chain.

The West Indies form an island chain about two thousand miles long north and east of the Caribbean Sea. The islands comprise three groups: the Greater Antilles, including the four largest islands of the chain; the Bahama group; and the Lesser Antilles.

The islands are partly volcanic and partly of coral formation; many of them are surrounded by coral reefs and some are subject to earthquakes. Most of the Lesser Antilles are high, and consist of volcanic rock. The islands of the Greater Antilles have broad lowland coast regions; much of Cuba is lowland. The Bahamas are



DRYING SPONGES, BAHAMAS.

low islands of coral limestone and broken shell. The area of all the islands together is about twice that of Pennsylvania, nearly half of this being in the island of Cuba.

The climate is tropical, but the heat is tempered by the trade winds. The rainy season occurs during our summer, and the dry season during our winter. Terrible hurricanes are not uncommon. Most of the islands have luxuriant tropical forests. The most valuable products are sugar cane, tobacco, coffee, and tropical fruits, "Spanish" mahogany and other cabinet and dye woods, rum made from sugar, cacao beans, sponges from the Bahamas, allspice and ginger from Jamaica, and asphalt from Trinidad.



ASPHALT LAKE, TRINIDAD.

The population is rather dense and is largely of Spanish or negro descent, for the Spaniards discovered and settled the islands and introduced many negroes from Africa to work the plantations.

Cuba is a republic under the influence of the United States. The soil is remarkably fertile and almost inexhaustible. Forests cover half the island and yield mahogany, lignum vitæ, ebony, logwood, and cedar. About one fifth of the world's cane-sugar crop, and much of the best tobacco for cigars, comes from Cuba. There are valuable iron and copper mines. The island is traversed by railroads.

Havana, the capital, is a large and important commercial city and the chief port. The choicest cigars are made here. *Santiago de Cuba*, near the iron and copper mines, is the largest seaport in the southeast.

Porto Rico belongs to the United States. It is the smallest of the Greater Antilles, but is about two thirds



SUGAR MILL, CUBA.

as large as Connecticut. It has even more people than that state and is therefore quite densely populated. About a third of the people are negroes; the rest are whites of Spanish descent.

The island is traversed from east to west by a range of low mountains, from which the forests have been largely cleared to make room for extensive coffee plantations. Sugar cane, tobacco, and rice are produced at lower elevations, and many cattle are raised.

San Juan, the capital, on the north coast, and *Ponce*, on the south coast, are the principal cities and ports.

The island of Haiti includes nearly one third of the area of the West Indies and consists of two independent negro republics. Name them. Years ago Haiti was a French colony, and a form of the French language is used by the negro inhabitants. Santo Domingo, how-



CUTTING SUGAR CANE, PORTO RICO.

ever, was a Spanish colony, and the Spanish language still prevails in that part of the island.

Nearly one sixth of the area of the West Indies belongs to Great Britain. **Jamaica, Trinidad,** and the little island of **Barbados** are by far the most important of the British West Indies. Barbados is the most densely settled island of the whole chain, and exports much sugar.

Guadeloupe and **Martinique** are French possessions, and, after Trinidad, are the largest islands of the Lesser Antilles.

Several small islands of the Lesser Antilles belong to the European kingdoms of Denmark and the Netherlands, and several near the northern coast of South America are part of the republic of Venezuela.

Supplemental Work. Read chapters 48-51, "Carpenter's Geographical Reader, North America," and chapters 51-60, "Australia and Islands of the Sea"; "The Boy Travellers in Mexico," by Thomas W. Knox; "At last: a Christmas in the West Indies," by C. Kingsley.



CACAO HARVEST, JAMAICA.

CORRELATIONS AND COMPARISONS

Size. Through how many degrees of latitude does North America extend? Through how many degrees of longitude? When it is midnight in the Pribilof Islands, what time is it in Newfoundland?

Coast. Name the chief seas and bays of the grand division; the chief peninsulas; the chief islands. Compare Greenland and Cuba in size; in surface; in climate. Compare Florida and Lower California in position; in climate; in formation. Compare Hudson Bay and the Gulf of Mexico. Compare the Chesapeake and San Francisco bays.

Surface. Name the chief mountain ranges of eastern and western North America, giving the direction, the general height, the formation, and the comparative age of each system. Name some mountains with jagged tops; some with smooth and level tops. Name and describe the chief plateaus of North America. Name and describe the lowlands.

Drainage. Name the chief lakes of North America. How are lakes formed? Where are streams generally rapid? Why? Where are streams sluggish? Why? Name some rivers which have built deltas; some which flow into estuaries; some which have cut canyons; some which meander through flood plains; some which are obstructed by falls. Explain the formation of deltas; estuaries; canyons; flood plains; falls. Name some rivers useful to commerce; some not useful.

Soil. Name the unproductive regions of North America. Which are so because the soil is too cold? too dry? too swampy? Where have glaciers made the soil more fertile? less fertile? How? Where are there alluvial plains? sandy plains? old lake beds?

Rock Formations. Explain the formation of the Tidewater region of eastern North America; of the Piedmont region. In what region are there mountain folds? In what region are there tilted strata? In what western region are there great outflows of lava? Where are there volcanoes in North America? Describe volcano formation. Where are there coal deposits? Describe the formation of coal; of peat.

Climate. Locate the heat belts of North America in summer; in winter. Describe five climatic belts or regions. Tell about the winds and rainfall of North America. Show by examples how climate may be affected by elevations of land; by latitude; by distribution of land and water; how climate may affect products and occupations. Describe the progress of a cyclone across North America; its path; its rotation, and the weather produced by its different parts. Where are there snow-capped mountains? mountain glaciers? continental glaciers?

Life. What are the three life regions of North America? Which is the largest? Give reasons for the existence of these regions. Where

are there few large *wild* animals? Why? Give some uses to which the *native* plants and animals of North America are put.

People. In what parts of North America do people of the black race chiefly live? Tell what you know of their history. What peoples of the red race are found in North America? How do the Eskimos live? Where are they found? Where do the Indians chiefly live? Where were they most nearly civilized when America was discovered? What people of the white race chiefly inhabit North America? What nations early settled there? What parts of North America are most densely populated? least densely? Why? What forms of government do you know? Describe each. What parts of North America belong to European nations? Name the republics of North America. Tell what you know of the history of the North American nations. What religion prevails in North America? What are the other chief religions of the world? What are the two chief languages spoken in North America? In what parts is each spoken?

Industries. How does the United States rank in each of the seven great industries? What are the chief industries of British America? of Danish America? of Mexico and Central America? of the West Indies?

Locate the chief agricultural regions of North America. How does agriculture depend upon climate? What is irrigation? Where is it practiced? Tell where each of the following is grown, and why: wheat, corn, rice, hay, oranges, sugar cane, cacao, tobacco, cotton.

In what regions of North America are these animals raised: cattle; hogs; sheep; horses? Give the chief uses of each. Where are there fur-bearing animals? In what waters are obtained fish? sponges?

Tell where there are dense forests; open forests; oak, cottonwood, pine, cedar, cypress, mahogany, redwood.

What regions yield each of the following: anthracite coal, bituminous coal; petroleum, natural gas; iron, copper, gold, silver; marble? How are some of these formed? How obtained? How used?

Where are the great manufacturing regions? Where are these articles made: cotton goods, woolen goods, clothing, silk goods, shoes; lumber, rubber goods, pitch; steel ships, iron and steel, glass, pottery, kerosene; butter and cheese, packed meat, refined sugar, flour?

Tell the chief trade advantages of each country of North America. Make a list of the chief trade centers, and tell the advantages of each. Show that surface forms affect railroad routes. Point out some canals.

Make a list of the capital cities in North America. What is a capital? Make a list of large cities, and tell of each the reason for its position or importance.



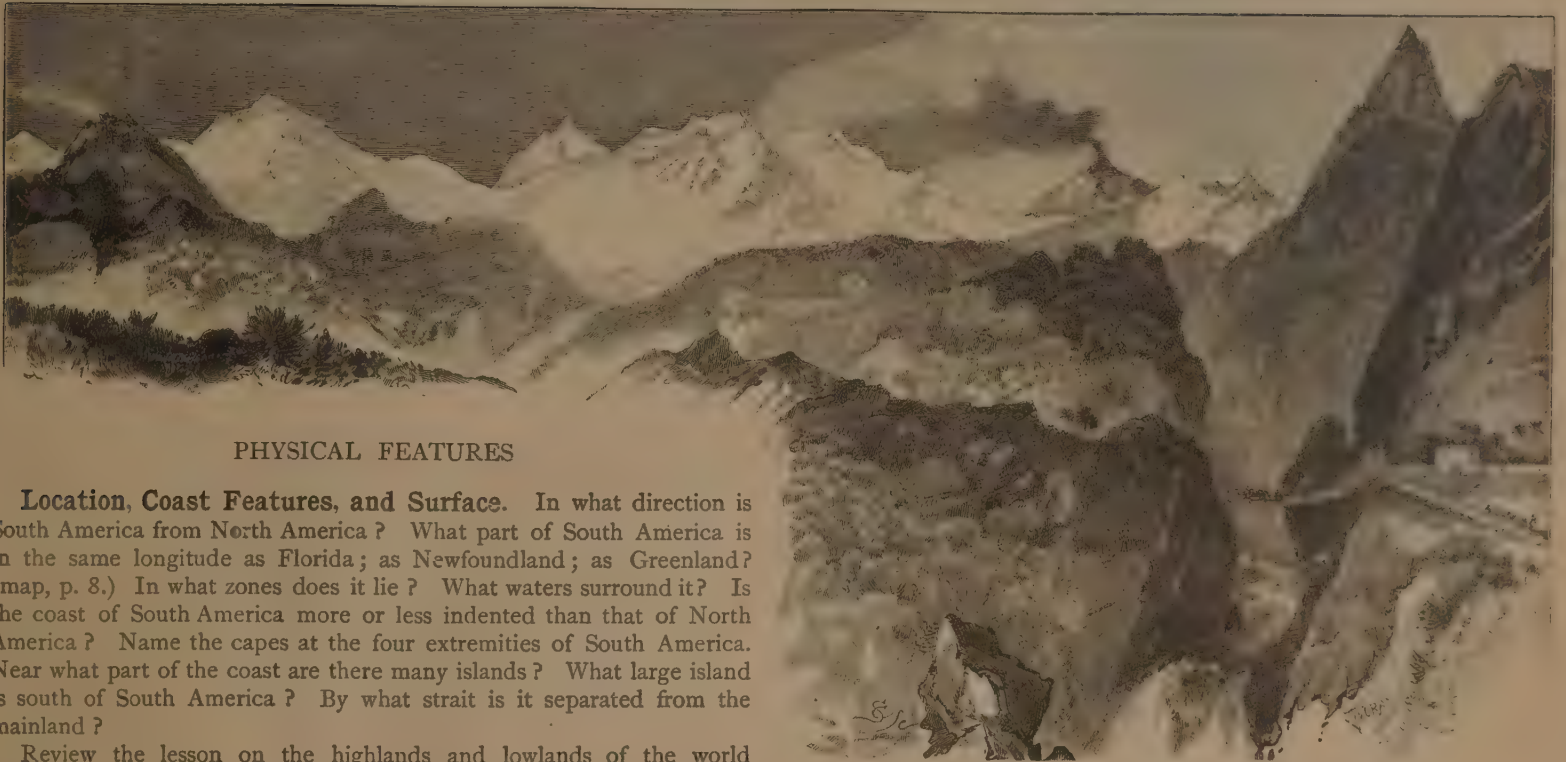
PHYSICAL MAP OF SOUTH AMERICA

Scale, 600 miles to one inch, same as the maps of North America,
Eurasia, Africa, and Australia.

SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
The highlands above 2000 feet are shown in
the buff tints, the lowlands in the green tints,
and the submerged part of the continental pla-
teau in the light blue tint.

SOUTH GEORGIA
(To Gr. Brit.)

SOUTH AMERICA



PHYSICAL FEATURES

Location, Coast Features, and Surface. In what direction is South America from North America? What part of South America is in the same longitude as Florida; as Newfoundland; as Greenland? (map, p. 8.) In what zones does it lie? What waters surround it? Is the coast of South America more or less indented than that of North America? Name the capes at the four extremities of South America. Near what part of the coast are there many islands? What large island is south of South America? By what strait is it separated from the mainland?

Review the lesson on the highlands and lowlands of the world (§§ 22-24). Where is the great highland region of South America? Compare it with that of North America in length; in width; in nearness to the coast; in general direction. What plateaus are in the eastern part of South America? Compare them with the eastern highlands of North America in size and position. Compare the great lowland of South America with that of North America in position; in size. Which has the greater area lower than 1000 feet elevation?

South America is but little more than two thirds as large as North America, and has much more nearly the regular shape of a triangle than the northern grand division. Few gulfs or bays break its coast line, and these are very small in comparison with Hudson Bay or even the Gulf of St. Lawrence.

The chief highlands of both grand divisions lie in the west, but the *Andes Mountains* are much loftier than the ranges of the North American highland, and are less broken. From the vicinity of the island of Trinidad nearly to the Strait of Magellan, they form a great wall along the north and west coasts. There are few passes across this chain less than two miles high, and many of the peaks are four miles in height. These peaks are the highest in America. Even in the torrid zone they always bear snow and glaciers near their summits, and in the south glaciers descend from the mountains to the sea.

Many of the high peaks are active volcanoes. Severe earthquakes are common throughout the chain, and sometimes cause great loss of life. On the west slopes

ANDES MOUNTAINS.

of the Andes are many terraces and shell deposits high above present sea level, marking former levels of the sea beach, and indicating a comparatively recent upheaval of the coast (§§ 25-27).

In the north the Andes consist of three ranges separated by long river valleys. Near the equator they unite in a single high range. South of the equator the highland widens, forming the plateau of Bolivia, which is about two and one half miles high, and is bordered by two lofty ranges. South of the plateau of Bolivia the Andes extend to the Strait of Magellan as a single great range. This great range is bordered on the west by a much lower and broken range which extends close along the coast.

The northern part of the plateau of Bolivia is traversed by deep valleys draining northwardly. The southern part is smoother, for it was once the bed of a series of great lakes when the climate was moister than it is at present. As the climate changed, the lakes shrunk in size or dried up, leaving terraces, or old beach lines, to mark their former limits, like those about Great Salt Lake in Utah (p. 46). Lake Titicaca, the largest remnant of these former lakes, is about half as large as Lake Ontario.

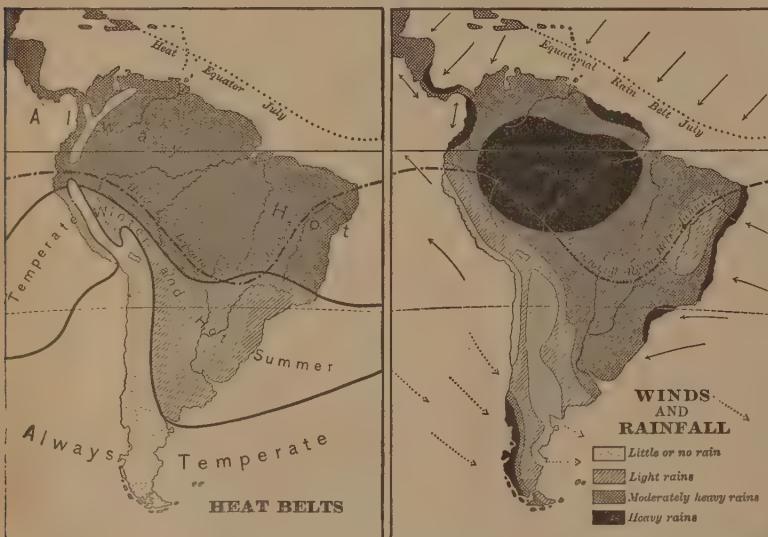
The *Brazilian plateau* is much lower than the Andean highland. Its height is about half a mile. Much of its

surface is rather level, but there are several mountain ranges, with at least one peak two miles high. In the east the plateau slopes abruptly to a narrow coast plain, but inland it merges gradually into the great central lowland.

In the north the smaller *highland of Guiana* reaches heights of about one and one half miles.

A vast lowland plain bordered by the three highland regions extends the entire length of the grand division, and from the Andes to the Atlantic. Low divides extend across this lowland from the Andes to the eastern highlands, and separate its surface into a northern, a central, and a southern slope. The slopes, however, are so gradual and the divides so low that they are imperceptible, and the characteristic features of the lowland are its flatness and its slight elevation above sea level.

The surface of this lowland is mostly covered with a fine clayey soil. Much of this region was doubtless formed beneath a shallow sea by sediment worn from the adjacent highlands, and then upheaved in comparatively recent times, like the Tidewater region of the Atlantic coast of the United States (p. 43).



Climate. Review the sections on the heat belts (§§ 79-82). What part of South America is always hot? What parts are always temperate? Mention a South American winter month. Review the sections on winds and rainfall (§§ 83-93). What winds prevail over the northern part of South America? over the southern part? Over what part of South America does the equatorial rain belt lie in January? Where does it lie in July? Where do the tropical calms cross South America? What parts of South America have heavy or moderately heavy rainfall? What parts have little or no rain?

There is comparatively little difference between the temperatures of winter and summer in South America. Most of the lowlands are always hot; in the extreme south they are stormy, chilly, and disagreeable, but seldom very cold; the elevated plateaus of the Andes are always temperate, and the higher summits always cold. In only a comparatively narrow central belt is there a notable difference between the temperature of summer and that of winter, and in this region the winters are seldom cold enough for the formation of ice.

The most plainly marked seasons are the wet and the dry, and they are determined by the position of the equatorial rain belt.

In our summer this belt lies north of the equator, and at this season there is generally least rain in South America. As the rain belt sweeps southward in our fall and winter, and northward again in our spring, the regions over which it passes have the heavy daily rains of the rainy season. At all times the trade winds from the southeast or the northeast blow far inland and discharge heavy rains wherever they are forced to rise. Hence, in the torrid zone, the east slope of the Andes is one of the rainiest regions in the world; but the Pacific slope, south of the rain belt, receives only the winds which have lost their moisture on the east slope, and this region is therefore very dry. In the south, where westerly winds prevail, the west slope receives a heavy rainfall, while the region east of the mountains is dry.

Drainage. Trace the continental divide of South America. Trace the divides of five great river basins which together embrace nearly all of the Atlantic slope, except its southern extremity. Which of these basins is largest? Name and locate the other four. Why are there no long rivers on the Pacific slope of South America?

The enormous amount of rain which falls on the Atlantic slope of South America gives to it some of the greatest rivers in the world.

The Amazon, while not so long as the Mississippi-Missouri, has a larger basin and discharges much more water into the ocean. It is much the largest river in the world.

The great river is several miles wide and is deep enough for the largest ocean steamers for more than a thousand miles above its mouth; large steamboats can ascend to the very foot of the Andes. When the river is flooded after the rainy seasons, it spreads out over the flat lowland to a much greater width, and it has built up a very wide flood plain, which is traversed by many broad, deep bayous. It has many large navigable tributaries, the Madeira being the largest from the south,



HEADWATERS OF THE AMAZON RIVER, PERU.



NATIVE BOAT ON SOUTH AMERICAN RIVER.

and the Rio Negro the largest from the north. Find the Tocantins River. Its estuary, Para River, is separated from the main estuary of the Amazon by Marajo Island. Because of this the Tocantins-Para River sometimes is not included in the Amazon system, though its estuary is connected with the Amazon and is always used by steamers entering this river from the ocean. The main Amazon estuary is filled with shifting sandbars near its mouth.

The Plata River, or Rio de la Plata, is really a great estuary formed by the sinking of the Parana River valley. Name the largest streams of the Parana system. The Plata or Parana basin is nearly as large as that of the Mississippi, and it discharges a much greater volume of water. The Parana is navigable for more than a thousand miles above its mouth, but the sediment it brings down has made much of the Plata estuary very shallow.

The Orinoco River has a smaller basin than the St. Lawrence, but the amount of water discharged is almost as great as that of the Mississippi. The Orinoco is more than a mile wide, and is navigable throughout most of its course in the lowlands. After the rainy season, which here occurs in the early summer, its floods convert much of its level valley into a great shallow lake. The Orinoco has a delta larger than the state of New Jersey.

The Magdalena River is a great commercial route far into the northern Andes.

The lower course of the São Francisco River is broken by falls where it descends into the coast plain, but its upper course is navigable for long distances.

The rivers in the southern part of the Atlantic slope

contain very little water during much of the year. Many short mountain streams fed by the melting snow descend the west slope of the Andes, but few of them reach the sea. The water is used for irrigation in that dry region, or it evaporates before it reaches the coast.

Compare North and South America as to the number of lakes.

TOPICS ON THE PHYSICAL FEATURES OF SOUTH AMERICA

I. WESTERN HIGHLANDS. Length. Height. Evidences of upheaval. Parts: northern—ranges, climate; central—ranges, plateau, climate; southern—ranges, climate. Passes. Glaciers.

II. EASTERN HIGHLANDS. Brazilian: height; surface; slopes; climate. Guiana: height; climate.

III. LOWLANDS. Surface. Slopes. Divides. Formation. Climate. Rivers: length; volume; mouths.

IV. COASTS. Bays and estuaries. Capes. Islands. Movements.

Supplemental Work. Make a sketch map of South America, putting in the chief rivers and highland regions. Model South America.



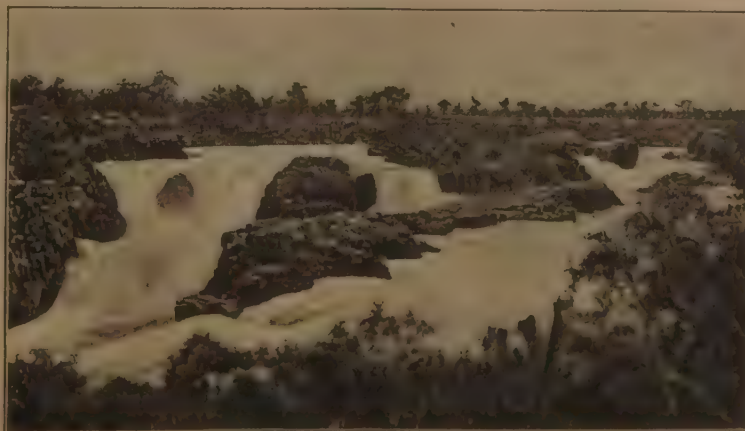
SOUTH AMERICAN FOREST.

VEGETATION AND ANIMALS

Review the sections on distribution of life (§§ 98–102). What parts of South America are forest-covered? Where are there open grassy regions? Where is the desert region? Why? Review the section on the South American region (§ 106).

Vegetation. The equatorial forests of South America, called *silvas* in the Amazon valley, are among the densest and most extensive in the world.

In the east are many nearly treeless *savannas* and *campos*; but in the central *silvas*, where the rainfall is heavier and more continuous, the damp and gloomy forests are almost unbroken for hundreds of miles. They



FALLS IN THE SÃO FRANCISCO RIVER.



are so dense, and in many parts so swampy, that it is almost impossible for men to traverse them except on the rivers and numerous bayous. (The character of these forests is described in § 99.) India rubber and other gums, cabinet and dye woods, Brazil nuts, cocoanuts, vanilla and cacao beans, and Peruvian bark, sarsaparilla, and other medicines are among the useful products of these forests.

In the southwestern part of the grand division also there are forests which are quite dense; and in them peculiar kinds of cedar, pine, oak, and laurel are abundant.

The plains of the Orinoco valley, called *llanos*, are treeless except for palms and mimosas which fringe the streams and crown the low hills. During the rainy season the region is covered with grasses, and affords fine pasturage, but in the dry season it is hardly more than a desert.

The plains, or *pampas*, extending southwestward from the Parana valley are like the Great Plains of the United States, and have very few trees. Many sheep and cattle graze there, but part of the region is divided into large farms.

Animals. No other region is so rich in animal life as South America.

In the silvas most of the animals are adapted for living on trees, and hence, with the exception of the tapir, jaguar, ant-eating bear, and boa constrictor, they are rather small. Among the smaller animals are monkeys, sloths, peccaries, and ant-eaters, many



On the pampas are the armadillo, the guanaco (a kind of llama), (and the American ostrich, or rhea. Deer are also found both on the pampas and on the llanos, but by far the most numerous animals of these plains are cattle, sheep, and horses which were introduced by man.

Supplemental Work. Locate the pampas, silvas, and llanos on your sketch map. Make a list of some of the products that are supplied by South American plants.

MAN

Population and Countries. South America, as a whole, is more sparsely peopled than North America. It has less than one fifth the population it would have if the people of the world were evenly distributed over the land surface. The densest population is found near the coasts. The interior is very thinly peopled, chiefly by Indians.

When Spaniards discovered the New World there were probably more Indians in South America than in North America. Those of the lowland were savages, but the *Incas*, on the plateau of Bolivia, had nearly reached a low stage of civilization.

With the aid of irrigation and fertilizers the Incas cultivated corn, potatoes, and cotton; they used the llama as a beast of burden, and the alpaca for



kinds of richly colored but generally songless birds, and countless insects and reptiles. In the rivers are found the whale-like manatee and the alligator.

The llama, alpaca, vicuña, and little chinchilla are found in the Andes and yield valuable wool. The llama is also used as a beast of burden. Among the mountains are found also deer, bears, the puma or panther, and the great condor.

SOME ANIMALS OF SOUTH AMERICA.



INCA RUINS, PERU.

its wool, which they wove into cloth; they built roads and houses of stone; they made bronze, and knew how to work gold and silver, of which they made beautiful ornaments and utensils.

The Spaniards who followed Columbus to the north coast soon heard of the gold-working Incas, and quickly conquered them and occupied nearly the whole Andes highland as far east as the Orinoco. Spaniards also made settlements in the Plata valley.

Meanwhile explorers from Portugal conquered much of the east coast, which came to be called Brazil. Here the Portuguese made the first agricultural settlements in America, to which they brought thousands of negro slaves from Africa.

Thus most of eastern and central South America was claimed and settled by the Portuguese, while the Andes region and the lower part of the Plata basin were claimed and settled by Spaniards. On the northeast coast the English, French, and Dutch founded a few small settlements.

The Spaniards and Portuguese enslaved the Indians and forced them to work in the mines or on the plantations. Some of the white settlers married Indian women, and in the east many negroes and Indians also intermarried, so that now fully one third of the people of South America are of a mixed race. About one third are pure-blooded whites, and the rest are Indians and negroes.

Spain's South American colonies were so harshly ruled that they finally rebelled and became independent republics. In these countries the Spanish language is still spoken. About the same time the Portuguese colonists made Brazil independent of Portugal; this country is now a republic, in which the Portuguese language is still spoken.

Find on the map (p. 100) the republic of Brazil; it is the largest country of South America.

Find the small French, Dutch, and British colonies in the northeast.

Find and make a list of the nine Spanish republics. Note that all but two of them lie partly on the Andes highland.

The government of all the republics is something like that of the United States, but in all of them there have been frequent civil wars, or revolutions, and nearly all have fought with one another about their boundaries, some of which are not yet definitely settled. Partly



SOUTH AMERICAN INDIANS.

because of these wars the industrial progress of the countries has been slow.

Still slavery has been abolished and free settlers are now coming in thousands from Europe, especially in the southeastern regions. Some railroads have been built; the larger cities are provided with street cars and electric lights; and schools and colleges have been established.

Catholic missions were early founded among the Indians, and most of the people in South America profess the Catholic faith; but other religions are permitted by law in all the countries except Peru and Ecuador.



RAILROAD ZIGZAGGING UP THE ANDES.

Industries and Products.

The leading industries in South America are herding, agriculture, and mining. The chief pasture lands are the pampas in the south and the llanos in the north. The valleys of the Plata River system, the southeastern part of the Brazilian plateau, and the river valleys along the northern coast of the grand division are the chief agricultural regions. In the torrid zone, coffee,

sugar cane, cotton, cacao, cassava, and tobacco are grown; in the temperate zone, wheat, corn, barley, and flaxseed are the chief crops. The silvas of the Amazon valley yield a large part of the world's supply of India rubber, as well as much Peruvian bark. Gold, silver, copper, and tin are mined chiefly in the Andes region, but the principal mineral product is nitrate of soda, useful as a fertilizer and in making gunpowder. The most valuable commercial products of the grand

division are coffee, rubber, wool, hides, and nitrate of soda.

The foreign trade is mainly with the United States and Europe. We get most of our coffee and rubber, much wool and sugar, and many hides from South America, to which we send flour and manufactured goods. Most of the South American imports come from Great Britain, Germany, and France, to which countries wool, beef, mutton, wheat, coffee, gold, silver, nitrates, and forest products are exported in return.

The most extensive railway system is in southern South America. A tunnel through the Andes provides railroad connection between the Plata and the Pacific. Throughout the central region the Amazon, with its tributaries, is the only commercial route. There are many comparatively short railroads from the Andes to the west and north coasts.

The United States of Brazil. Bound Brazil. What great river is in the northern part? Name the chief Brazilian tributaries of the Amazon. Trace the southern divide of the Amazon basin through Brazil. What rivers are south of this divide? Name and locate the capital; four cities north of the capital; two southwest.



GATHERING RUBBER.

Brazil is larger than the United States (without Alaska) and embraces nearly half the area and population of South America.

The whole northern part of the country lies in the Amazon valley, much of which is covered with dense and often swampy forests. In this region there are but few inhabitants, and these are chiefly Indians. Many of them are employed in the rubber industry. They collect the sap from the rubber trees, and harden it, in the smoke of burning palm nuts,

into crude rubber. It is then sent down the great river to be shipped to Europe and the United States.

The great agricultural region of Brazil is a comparatively narrow strip along the east and southeast coasts. It lies partly in the narrow coast plain and river valleys and partly on the Brazilian plateau. Fully six sevenths of the population of the country live in this region. In the warmer northern part, negroes are numerous, and sugar cane, cotton, and tobacco are extensively cultivated, along with the chief food crops, corn, beans, and cassava. Farther south Europeans, chiefly Portuguese, Italians, and Germans, form the bulk of the population. On the uplands in the neighborhood of the tropic of Capricorn are the world's great coffee plantations. In the grassy uplands of the south cattle herding is the common industry, and dried beef and hides the chief products.

Much of the Brazilian portion of the Paraguay and Parana valleys is forest-covered and thinly peopled with Indians and half-breeds.



COFFEE HULLING.



CACAO TREES AND FRUIT.



DRYING COFFEE, BRAZIL.

Rio de Janeiro, the second city of South America in size, has one of the few fine harbors of the grand division, and ships much coffee, mostly to the United States. *São Paulo* is a trade center in the coffee region. Its port, *Santos*, ships more coffee than Rio de Janeiro, but chiefly to Europe.

Bahia and *Pernambuco* are the ports of the sugar and tobacco district. *Para* is the great rubber-shipping port, and *Maranhão* ships raw cotton. *Porto Alegre* exports dried beef and hides.

Argentina. Bound Argentina. How does it rank in size among South American countries? Describe its surface; its chief rivers. Name the capital; three cities of the interior.

Argentina, situated in latitude nearly corresponding to that of the United States, is the largest and most progressive of the Spanish republics. It has more railroads than any other South American country, and its population is rapidly increasing by immigration from Europe, especially from Italy.

The surface is a gradual slope from the lowland in the east to the high plateau near the base of the Andes. Mt. Aconcagua, near the western boundary, is the highest point of the Western Continent. The northeast is warm and moist, and is a forest wilderness inhabited by Indians.

South of Salado River most of the country is an open plain. The pampas proper embrace the eastern part of this region as far south as Colorado River.

The soil of the pampas is fertile and the rainfall is sufficient for farming. The western part of the country is arid. The southern part is both dry and chilly, but it affords good pasturage for sheep.

Herding is the chief industry. Argentina has more sheep than any other country in the world, and is exceeded by few in the number of cattle. Great quantities of wool, hides, tallow, live stock, and meat, both fresh and cured, and other cattle products are exported. Wheat, corn, and flaxseed are also raised for export in the region surrounding Buenos Aires, and by the aid of irrigation grapes for wine and raisins are raised in the west and sugar cane in the northwest. Quebracho wood for tanning is obtained from the forest region and exported.

Buenos Aires, the largest city of South America, is the great seaport of Argentina and of nearly the whole Plata valley. It is a handsome city, with fine buildings, electric lights and street railways, and a large foreign population, chiefly Italian.

Rosario is a growing port. *Cordova* and *Tucuman* (in the sugar-growing region) are trade centers in the interior of the country.

Uruguay. What countries border Uruguay? Describe its surface and drainage. Name and locate the capital.

Though the smallest republic in South America, Uruguay ranks fourth in the value of its foreign commerce. Its industries are similar to those of Argentina. *Montevideo*, the chief



VICTORIA PLAZA, BUENOS AIRES, ARGENTINA.

commercial city of Uruguay, is about one fourth the size of Buenos Aires.

Paraguay. What countries border Paraguay? In what zones is it? By what rivers is it drained? What is the capital?

Cattle raising is an important industry in Paraguay, but the climate is too warm for sheep. Maté, or "Paraguay tea," is extensively cultivated, as also are corn, cassava, tobacco, and sugar cane. The women cultivate the crops, and the men gather the maté leaves and herd the cattle. Lumber and other forest products are exported to Europe. *Asuncion* is the chief trade center.

Supplemental Work. Read chapters 22-41, "Carpenter's Geographical Reader, South America."



VALPARAISO, CHILE.

Chile. Bound Chile. Describe its surface. Name and locate the capital. What important seaport is near it? Name a seaport farther south. Name two seaports in the north.

Chile is the third country of South America in importance. It occupies the narrow Pacific slope through more than half the length of the grand division. Its extent in latitude corresponds with that between southern Mexico and southern Alaska.

The surface resembles that of the Pacific coast region of North America. There is a lofty mountain chain on the east, a much lower range along the coast, and a low valley between the two. In the south the coast range of Chile forms an archipelago corresponding to that west of British Columbia and southern Alaska.

About one third of the people of Chile are white, mostly of Spanish descent. There are a few Indians in the south; but about two thirds of the people are half-breeds, who form the laboring class.

Because of differences in climate, the northern, central, and southern parts of Chile differ greatly in industries and products.

The hot northern section is a desert so dry that in some places water is brought in pipes from the Andes over one hundred miles distant. Here the mining of nitrate of soda for export is a great industry. The mineral is



PUNTA ARENAS, CHILE; SOUTHERNMOST TOWN OF THE WORLD

obtained from old lake beds in the central valley, and forms the chief wealth of Chile. Much copper, and some silver and gold, are also mined in this section.

The central section has a moderate rainfall and temperature, and agriculture and herding are the chief industries. It is the food-producing region of Chile, and the home of five sixths of the population. Wheat, barley, grapes and other fruits are raised—in some quarters by the aid of irrigation. Coal is mined in the coast range south of Concepcion, and is exported.

Southern Chile is cold and has a very heavy rainfall. Lumbering is an important industry, though lumber is also imported into Chile from the United States. Coal and gold are mined in the south, near Punta Arenas.

Nitrate, or "Chile saltpeter," which forms the principal export, is sent chiefly to Europe, where it is manufactured into fertilizing compounds and sent to various parts of the world. It is also used in the manufacture of explosives. Copper, iodine, silver, wheat, leather, and hides are other Chilean exports.

Santiago, the largest city, is almost half a mile above the sea, and fifty miles inland. Like most of the larger cities of South America, it is much older than any city in the United States. Because of earthquakes, the houses are low and the streets wide, as in all the cities of the Andes. *Valparaíso*, the largest Pacific port of South America, is the chief importing point of Chile. Most of the minerals are shipped from *Iquique* and *Antofagasta*.



CENTRAL PLAZA, SANTIAGO, CHILE.



STREET IN LA PAZ, BOLIVIA.

Bolivia. What countries border Bolivia? In what respect does Bolivia differ from all other South American countries except Paraguay? Describe the surface. Name the capital; a city near Lake Titicaca.

In Bolivia the eastern range of the Andes is wide and exceedingly rugged. Several of its volcanic cones are nearly as high as Mt. Aconcagua. In these mountains are mined silver and tin, which are exported chiefly through the Chilean port of Antofagasta. Most of the imports come through the Peruvian port of Mollendo. Both ports are connected by rail with the plateau.

On the plateau, wheat, corn, barley, beans, and potatoes are raised, and cattle, sheep, and llamas are herded. Cinchona, cacao beans, and rubber are gathered from the forests of the east slopes and exported by way of the Madeira and Paraguay rivers.

La Paz is the largest town and the usual seat of government. The city is built in a deep gorge, through which Lake Titicaca once found an outlet into the Amazon system. *Sucre*, not far from the rich silver mines of Potosi, is the constitutional capital.

Supplemental Work. Read chapters 10-21, "Carpenter's Geographical Reader, South America."

Peru. Bound Peru. What great river rises in Peru? Describe the surface. Locate the capital. What city is in the south? What city lies on the plateau?

Peru lies on both sides of the Andes and presents great contrasts of climate. Few people live on the desert coast, because it is so dry, or in the inland forests, because they are so wet. Much sugar and cotton are grown, by the aid of irrigation, in the valleys of the west

slope. On the plateau copper and silver are mined, the same kinds of food plants are raised as in Bolivia, and llamas, alpacas, and goats are herded. On the east slope, rubber, cacao beans, and cinchona are gathered. There are rich petroleum wells in the north, and extensive deposits of guano along the dry coast. The chief exports are sugar, rubber, cotton, copper ore, and wool. Three fourths of the people are of Indian descent.

Lima, the largest city, is six miles from its seaport *Callao* and about 600 feet above it. *Arequipa* is an important railroad town, more than one and a half miles above Mollendo, its seaport. *Cuzco*, the chief town of the plateau region, was the old capital of the Incas.

Ecuador. Bound Ecuador. Describe its surface. Name two volcanoes. What is the capital? the chief seaport?



AREQUIPA AND VOLCANO MISTI, PERU.

Ecuador has but little commercial importance. It claims large areas to the east which have been occupied by Colombia and Peru. Cacao is cultivated on the Pacific slope and is the chief export.

Quito, the largest town, though nearly on the equator, is about two miles above the sea and has a delightful climate. *Guayaquil* is the principal port and commercial city.

The Galapagos group of volcanic islands, 700 miles out in the Pacific, belongs

to Ecuador. They have few inhabitants.

Colombia. By what countries and waters is Colombia bordered? Trace the divides between the Pacific, Caribbean, and Atlantic slopes. Describe the surface. What is the capital? Name two other cities.



MARKET AND WATER FRONT, GUAYAQUIL, ECUADOR.

Most of the Colombian people live in the upper valleys of the Cauca and Magdalena rivers. On the hot lowlands cassava and bananas are cultivated; at more temperate elevations, corn, potatoes, tobacco, coffee, and cacao; and on the cool highlands, wheat, oats, potatoes, and beans. Herding is an important industry. Colombia is rich in minerals, and gold and silver are mined and exported. The famous mines of Muzo produce emeralds. Other exports include coffee, cattle, hides, tobacco, and bananas. *Bogota*, on the healthful highland, is the capital and largest city. *Medellin* is the center of the chief gold-mining region. *Barranquilla* is the great receiving and shipping point for Colombian trade.

Venezuela. Bound Venezuela. Describe its surface and drainage. What lagoon is in the northwest? What is the capital? Name two other cities.

Venezuela occupies most of the Orinoco River basin, including a large proportion of the llano region. Most of the people live on the high slopes of the Andes in the north. On the uplands excellent "Maracaibo" coffee



NATIVE WOMEN OF BOGOTA, COLOMBIA

and some cacao are grown for export. Hides are exported from the llanos, rubber and dyewoods from the southern forests, and gold from the southeast. *Caracas*, the largest city, is more than half a mile above the sea, and is connected by a railroad with its port, *La Guaira*, eight miles distant. *Valencia*, also on the uplands, and *Maracaibo*, the only large town on the unhealthy lowlands, are trade centers.

Guiana. What countries border Guiana? To what European nations does it belong? What is the chief town of each division?

Sugar raising and gold mining are the chief occupations in British and Dutch Guiana, and both of these articles are exported. There are comparatively few white settlers, but many negroes, Hindus, and Chinese laborers. French Guiana is used by France as a place to which criminals are banished.

The Falkland Islands, about 300 miles east of the Strait of Magellan, form a small British colony. The chief industry is sheep raising.

Supplemental Work. Read chapters 1-9 and 42-44, "Carpenter's Geographical Reader, South America."

CORRELATIONS AND COMPARISONS

Size. How does South America compare with North America in extent of longitude? When it is noon at Pernambuco what time is it at Guayaquil? in the Gulf of St. Lawrence? in Galveston Bay? on Vancouver Island? Compare the two grand divisions in extent of latitude. Use the scale of miles to compare the greatest widths and lengths of the two grand divisions.

Shape and Coast. Compare the general shape of South America with that of North America. Compare their coasts as to regularity of outline. Compare Lake Maracaibo with Hudson Bay; the estuaries of eastern South America with those of eastern North America; the indentations of the western coasts of the two Americas. Compare in number and size the continental islands (§ 20) of South and of North America. What is the largest island near the north coast of South America? What coast of South America most resembles the western coast of British America and southern Alaska?

Surface. Compare the western highlands of North and South America in general height; in extent of plateaus; in number and regularity of ranges. Compare the eastern highlands of the grand divisions in extent; in general height. Compare the lowlands of North and South America in position; in surface; in slopes.

Drainage. Compare the various river systems of the two Americas. Explain, where you can, the reasons for the differences and similarities you notice. Compare the lakes of South America with those of North America in number, size, and position. Name four rivers that are important to commerce.

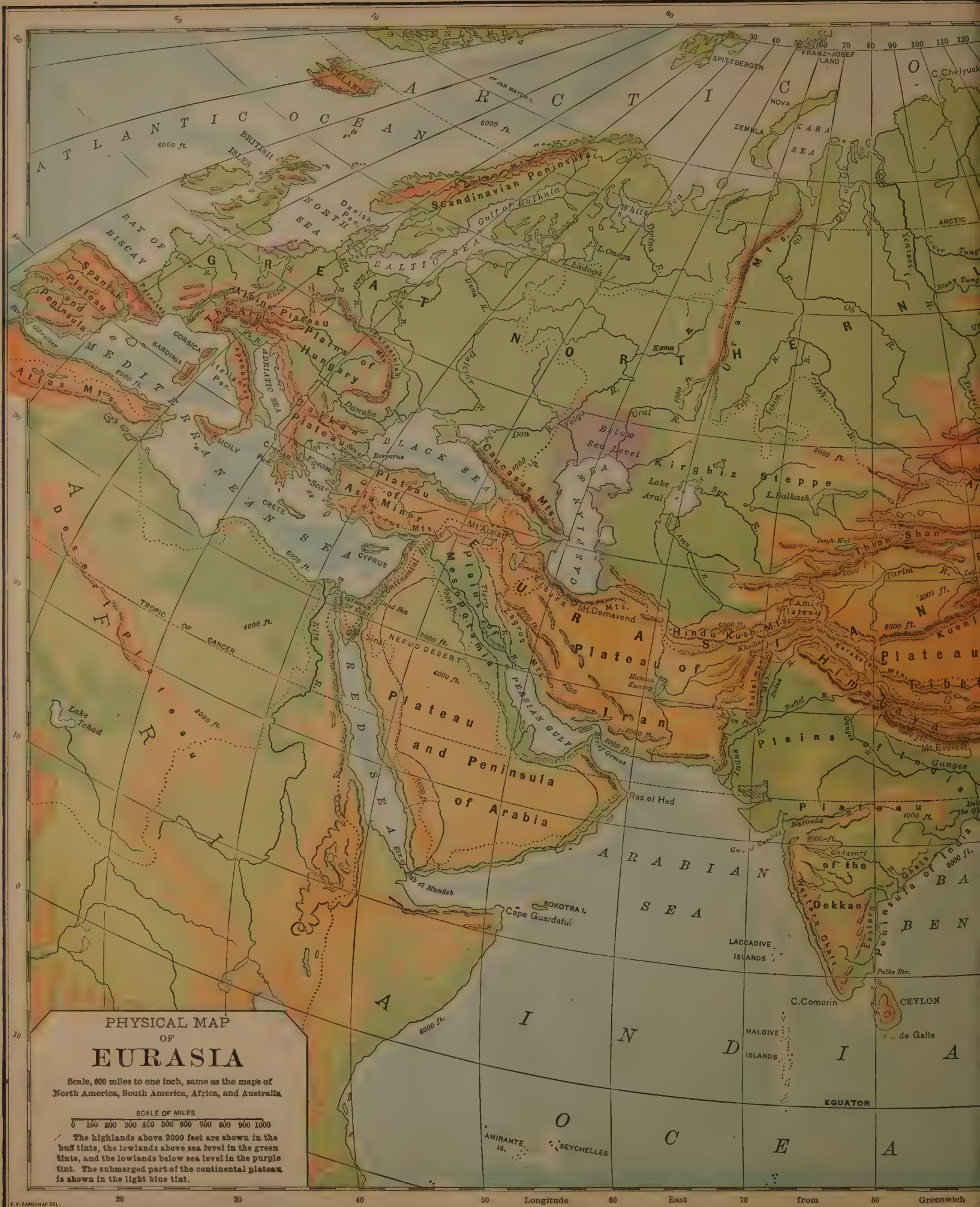
Climate. Compare the heat belts of South America and North America in number. Give some reasons why the eastern part of South America has more rainfall than the eastern part of North America. Write a short comparative description of the climates of the two grand divisions.

Life. Compare as to extent and cause the unproductive regions in the two Americas. Which has larger areas of dense forests? of open forests? Which of the South American grassy regions most resembles our Great Plains? How much of North America does the South American life region include? (map, p. 25.) Compare the life forms of the silvas with those of the Andes; of the llanos; of the pampas.

People. Compare the two Americas in density of population. Show how this density has been affected in each case by latitude; by elevation; by occupation. In what parts of North America does the black race chiefly live? in what parts of South America? Why? What other races are found in South America? Chiefly in what parts? How did the Indians formerly living in North America and South America compare in civilization?

Countries. Compare the forms of government in the two Americas. In which does a larger proportion of territory belong to European nations? Which contains the greater number of republics? Name the republics of South America. Compare Brazil with the United States in size; government; prevailing language. Compare Guiana with British Honduras. Compare the other South American countries with Mexico.

Industries. What agricultural products are important in both Americas? Which grow chiefly in South America? What minerals are mined in both? Which chiefly in South America? What important minerals are little mined in South America? Compare the forest products of the two grand divisions. Find industrial regions of North America to which the various countries of South America correspond in products. To what industrial section of the United States is there no corresponding country in South America? Describe the commerce between the South American countries and Europe and the United States. Compare the natural trade routes within South and North America; the artificial trade routes.



PHYSICAL MAP
OF
EURASIA

Scale, 600 miles to one inch, same as the maps of
North America, South America, Africa, and Australia

SCALE OF MILES

0 100 200 300 400 500 600 700 800 900 1000

The highlands above 2000 feet are shown in the
buff tints, the lowlands above sea level in the green
tints, and the lowlands below sea level in the purple
tint. The submerged part of the continental plateau
is shown in the light blue tint.

EURASIA

PHYSICAL FEATURES

Extent and Coast Features. What ocean is north of Eurasia? What ocean is west? What great sea and ocean are on the south? What ocean is east? From the star map, p. 8, name the grand division on the opposite side of the Arctic Ocean. What grand division is southwest of Eurasia? What continent is southeast?

On the map opposite connect with straight lines the most eastern, western, and southern points of the Eurasian mainland. What is the general shape of the grand division? Which side has the most regular, and which the most irregular, coast line? Make a list of the larger indentations of each side. Make a list of the peninsulas. Name a long island chain and an archipelago east of Eurasia; an island group west of it.

Eurasia contains more than a third of the land surface of the globe, and is by far the largest grand division. It extends southward nearly to the equator, and northward far into the frigid zone. It extends more than halfway round the earth in an east and west direction, so that when the days and nights are of equal length, a new day dawns on the shores of Bering Strait before the sun has set on the western coast of Spain.

The grand division is roughly triangular in shape. The southwestern side is made very irregular by great arms of the Mediterranean Sea and the Indian Ocean. The southeastern side is also irregular and is bordered by the Japanese Islands and the East Indies.

Surface. Review the lesson on highlands and lowlands (p. 10). In what part of Eurasia are nearly all the highlands? Name four large plateaus of the Eurasian highland; five smaller plateaus. What part of Eurasia is an almost continuous lowland plain? By what mountain range is it divided? Name three lowland plains on the Pacific slopes; two on the Indian Ocean slope. Name a detached plateau of this slope.

The Highlands. The great Eurasian highland is cut entirely through by the outlet from the Black Sea, but extends through southern Europe as a broken and narrower highland to the Spanish peninsula. In central Asia this vast highland is 2500 miles wide. There is no continuous mountain chain traversing the highland, as in America, but from Bering Strait to the Strait of Gibraltar there is a broken succession of mountain ranges. Between them are broad, dry plateaus which differ greatly in elevation. The small, rugged Pamir plateau and the extensive plateau of Tibet are about three miles in elevation, while the plateaus to the northeast and southwest of them are less than one third as high. The mountains rise from one to three miles above the plateaus, and among them are the highest ranges in the world.

Ranges. The three ranges which extend eastward from the Pamir region near the borders of the plateaus of Tibet and Mongolia are the loftiest mountains in the world. Name them. The upper third of their slopes is always covered with snow, from





which glaciers extend much lower. Mt. Everest, in the Himalayas, is the highest measured peak ($5\frac{1}{2}$ miles), but there are many peaks nearly as high in each of these ranges.

What three ranges are northeast of the Thian Shan? These ranges are lower than those nearer the Pamir plateau, but the snow-clad peaks of the Altai range are three miles high.

What three ranges form the northern border of the highland west of Pamir plateau? the eastern and southern border? The Hindu Kush is a snow-capped range about four miles high. The others are lower, but the upper valleys of the Caucasus are filled with glaciers.

Name four ranges in southern Europe. Of these, the Alps and the Pyrenees are snow-clad, and have peaks over two miles high.

What two mountain ranges are in the northern lowland? These ranges are scarcely a mile high. The Urals are a gradual swell in the great plain. The Kiolen Mountains slope gently to the east, but their abrupt western slope forms the bold, rocky coast of the Scandinavian peninsula. Great glaciers descend from it to the sea.

Earthquakes are not uncommon throughout the Eurasian highland, and they indicate that its upheaval may still be in progress. There are comparatively few active volcanoes on the mainland of Eurasia, and these are widely separated. About 150 active volcanoes, however, occur on the islands which rise from the continental shelf east and southeast of Asia. This is the most active volcanic region in the world. It is shaken by earthquakes almost constantly.

The Lowlands. Most of northern Eurasia is lowland with an elevation of less than 500 feet, and around the Caspian Sea it is actually below sea level. In general its flat surface is broken only by the bluffs which border the streams.

The plains east and south of the great highlands were once the bottom of shallow seas, which were nearly filled with rock waste washed from the bordering mountains, and then slightly upheaved, forming fertile lowlands.

Climate. Review the sections on the heat belts and winds and rainfall (§§ 79-93). Where are the largest regions of heavy or

moderately heavy rainfall in Eurasia? Where are the regions of light rains or no rain? What is peculiar about the winds of southern and southeastern Asia? (§ 87.) What effect have these winds and the highlands upon the rainfall of this region? upon the rainfall of central and southwestern Asia? What are the causes of the moderately heavy and the light rainfall in western and northern Eurasia?

With the exception of the southern and the western parts, Eurasia is characterized by excessive temperature changes during the year. The coldest winters in the world occur in northeastern Asia, and nearly the hottest summers in southwestern Asia. Even in the hot belt there is a chilly season when the dry winds blow southward from the highlands. In the west the summer heat and the winter cold are tempered by the prevailing winds from the Atlantic.



In the south and southeast the monsoon winds (§ 87) blowing from the sea in summer yield copious rainfall on the seaward slopes, while little rain falls at other seasons, when the winds blow seaward. The sea winds lose most of their moisture on the seaward slopes of the ranges bordering the great highlands, so that the plateaus and lowlands behind these ranges receive little or no rain and are therefore deserts. The westerly winds, with their cyclonic storms (§ 86), yield ample rainfall at nearly all seasons over western and central Europe, but have little moisture left when they reach northern Asia.

Drainage. From the Khingan Mountains trace the dotted line around a great central region of Eurasia whose drainage does not reach the ocean. Locate this region on the rainfall map, and tell why it is a region of "interior drainage." What becomes of its streams? (§ 47.) Is the water of these lakes fresh or salt? Why? What is the largest sheet of water in this region? What two large tributaries has it? What other part of Eurasia sends no drainage to the sea? What three large rivers of Eurasia flow to the Arctic Ocean? What four flow to the Pacific Ocean? Name four that flow to the Indian Ocean. Name three that flow to the Atlantic Ocean, through the Black Sea. Do the Eurasian rivers flowing to the Arctic and those flowing to the Indian Ocean have their sources near together? What separates them?

As so large a part of Eurasia receives light rainfall, none of its streams equals the great rivers of America. On the moist southeast slope the river basins



THE ALPS.

are comparatively small, while the large basins of the north receive only a light rainfall. Thus the Yangtze, the longest river of Eurasia, is not much larger than the St. Lawrence in volume, and the four large rivers of the north are a little smaller. Because of greater rainfall the streams in the southeast and in the west are larger in proportion to their length than those in the north and in the southwest.

The Caspian Sea is about five times as large as Lake Superior, and is the largest lake in the world. Evaporation is so rapid that its surface lies about eighty-five feet below sea level, though it receives the Ural River and the great Volga. The land barrier which separates the Black Sea from the Caspian, north of the Caucasus, is so low that if the Black Sea were to rise ninety feet it would overflow into the Caspian. Lakes Aral and Balkash, like the Caspian Sea, have no outlets; because of the rapid evaporation, they do not rise high enough to overflow their basins.

Lake Baikal, in the Yenisei basin, is about twice the size of Lake Ontario, and is the largest fresh-water lake in Eurasia. There are many small fresh-water lakes and extensive swamps on the low, flat northern plain, particularly west of the Ural Mountains, where the surface is covered with the drift of the old Scandinavian glacier (§ 60). Ladoga and Onega are the largest of these lakes.

Supplemental Work. Draw a map of Eurasia, naming the chief indentations and peninsulas, the chief mountains and rivers, and indicating the chief divides. Model Eurasia. Write a comparison of the climates of central, southern, and western Eurasia.

VEGETATION AND ANIMALS

Review the lesson on distribution of life (§§ 98-104). Where are the forest regions of Eurasia? What part is an open grassy region or a desert? What two great life regions occupy most of Eurasia? What physical features form the barrier between these regions? Review the lessons on the Oriental and Eurasian life regions (§§ 108, 109), and mention some of the characteristic plants and animals of each region.

Northern and Western Eurasia. The Arctic coast of Eurasia, like that of America, is bordered by tundras (§ 101), in which mosses and lichens form the principal vegetation. The broad belt of forests south of the tundras is composed chiefly of cone-bearing evergreen trees, such as spruce, pines, and firs, but is broken by many great treeless areas and swamps covered with birch and willow thickets. In the southwestern part of this belt are extensive forests of oak, beech, and other hardwood trees. Many years ago this forest belt extended westward to the Atlantic, but it has long since been cleared away from the fertile lowlands in that region.

The principal large animals of the forest region are much the same as those of the North American region in the same latitudes—the reindeer, elk, bear, wolf, and many small fur-bearing animals, such as ermines, martens, sables, squirrels, and foxes.

Central and Southwestern Eurasia. In the drier region south of the forest belt, both in the lowlands and on the plateaus, are vast prairies, or *steppes*, which farther south merge into deserts. These steppes and deserts form the characteristic feature of central Eurasia from the Mediterranean nearly to the Pacific.

The mountain sides in this region are moister than the lower lands, and there forests occur. Oaks, beeches, chestnuts, cedars, laurels, and myrtles are common on the lower slopes, while firs, pines, and other trees yielding resinous gums grow at greater elevations.

This is the home of the horse, cow, camel, sheep, goat, and hog, and great numbers of all these animals are raised here. Among the wild animals are many kinds of sheep and goats, antelopes and gazelles, wild boars, camels, asses, and oxen, including hairy yaks and hairless buffaloes. There are several kinds of bears among

face rock waste, while other parts are deeply covered with shifting sand dunes.

Southeastern Eurasia. In southeastern Asia the forests have been much reduced by the crowded population, and are now confined to tracts least favorable to cultivation — as marshy lowlands or rough hilly districts. These forests are much denser and more luxuriant than those of the north. In the lowlands are many kinds of palms, bamboos, and trees yielding India rubber, spices, and dye-woods, together with pitcher plants and hundreds of vines growing between the trees, matting them together



SOME ANIMALS OF EURASIA.

the mountains, and the tiger and the leopard wander northward as far as to the Amur River, and to the southern shores of the Caspian Sea.

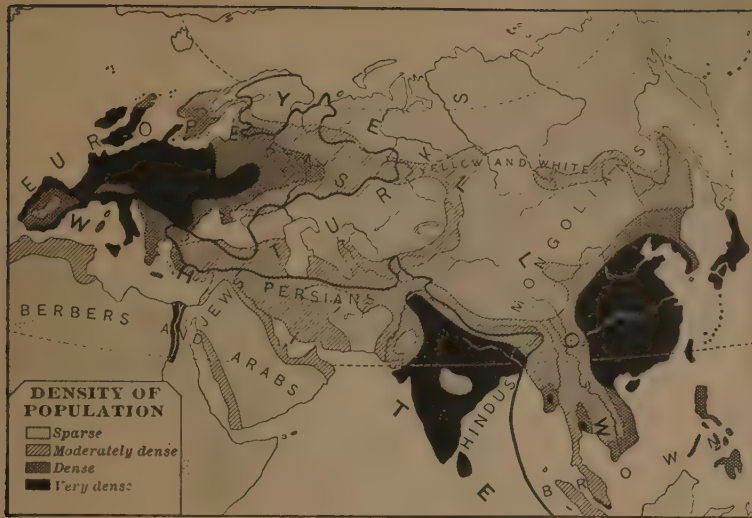
The great deserts are devoid of surface water for hundreds of miles. In places, however, the ground water comes near enough to the surface to supply the roots of plants. An *oasis* of vegetation is thus formed in the midst of the barren desert. Some oases are miles in extent and contain springs and running streams, but others are small and afford water to the thirsty traveler only by means of wells.

Because of windstorms some parts of almost all deserts are bare and stony, being swept nearly clean of the sur-

face and forming with the rank undergrowth an impenetrable *jungle*.

Here the rhinoceros and the wild boar make their homes. Tigers and leopards also live in the jungle. These fierce animals wander out into the cultivated lands at night and kill not only hundreds of people every year, but thousands of sheep and cattle as well. Many people, also, are killed by the poisonous bite of the cobra, a snake which abounds in India.

On the higher lands the forests are composed of many fine timber trees, of which the toon, sal, teak, satinwood, and sandalwood are the most valuable. In these forests are found elephants, bears, monkeys, and wild cattle.



MAN

In what parts of Eurasia is the population dense or very dense? Why are northern, central, and southwestern Asia not so well adapted for a dense population? What three races live in Eurasia? In what parts do the whites live chiefly? Locate the homes of five peoples of the white race. What people of the yellow race live in a region extending westward between the Europeans and other Aryan peoples (Persians and Hindus)? Locate the home of another people of the yellow race. Review the lesson on man's manner of life, §§ 120-122.

Eurasia contains about four fifths of the population of the world and is the most densely peopled of the grand divisions.

More than two thirds of the people live in the three regions of very dense population, and have reached the stage of civilization. It is only in the dense forests of the islands and mainland in the extreme southeast and along the bleak Arctic shores that savage tribes are found. Most of the natives in the sparsely settled parts

of the northern lowland are far advanced through the stage of barbarism.

Unlike America, Eurasia has been the home of civilized man ever since the beginning of history. People were already civilized more than 4000 years ago in the plains of Mesopotamia, India, and China, and in the fertile valley of the Nile in northeastern Africa. This early civilization improved so slowly that many of the people of these regions are not yet highly civilized.

More than 3000 years ago civilization reached the Grecian peninsula, and thence it gradually spread through Europe. This western civilization improved so greatly that the Aryans of Europe became more highly civilized than the other people of Eurasia. As they advanced in civilization their wants became greater, and they sought new and better commercial routes by which their wants might be supplied.

In this search their ships sailed completely around the world, and they discovered southern Africa, the unknown continents of America and Australia, and the islands of the sea. They planted colonies in these and other lands, thus carrying their civilization over the globe. This civilization has constantly advanced until now the European Aryans and their descendants in the new lands which they have settled are by far the most enlightened people in the world.

TOPICS ON EURASIA

I. NORTHERN PLAIN. Coast. Surface. Climate. Drainage. Life: vegetable; animal. Man: density; races; civilization.

II. EASTERN AND SOUTHERN PLAINS. Names. Formation. Climate. Drainage. Life: vegetable; animal. Man: density; races; history; civilization.

III. EASTERN HIGHLANDS. Plateaus. Mountains. Climate. Life.

IV. WESTERN HIGHLANDS. Plateaus. Mountains. Climate. Life.

V. ISLANDS. Western. Eastern. Chief groups. Volcanoes.

EUROPE

Before studying the following lesson on People and Countries take the Map Exercise on Europe at the top of page 115.

PEOPLE AND COUNTRIES

People. Europe, though little larger than the United States, contains five times as many inhabitants. Compare the regions of dense and very dense population with the corresponding regions in the United States (map, p. 49). Where is the population of Europe sparse?

Countries. Europe is composed of twenty or more independent countries, in nearly every one of which the people differ from those of the others in language and customs.

This variety in language and customs is one of the most striking differences between Europe and the United States. The difference arises mainly from the different ways in which the two regions were civilized. The







THE RUINS OF THE COLISEUM, IN ROME.

Map Exercise on Europe. The Ural and Caucasus mountains and the Caspian and Black seas are conveniently regarded as the physical boundaries between Europe and Asia. What is the most northern point of the European mainland? What point on the American mainland is in about the same latitude? What point on the eastern coast of America is in about the same latitude as the most southern point of the European mainland? How does Europe compare with the United States in size?

From the Ural Mountains trace the divide between the northern and southern slopes of Europe. In what physical division does the eastern half of this divide lie? the western half? Into what arms of the sea is the northern slope drained? Name two rivers that flow into the Baltic sea; two that flow into the North Sea; one that flows into the Bay of Biscay. Into what seas is the southern slope drained? Trace in Europe the divide of the Caspian basin; of the Black Sea basin. Name the two largest rivers of the Caspian basin; the three largest of the Black Sea basin. What river flows into the Adriatic? What two flow into the western part of the Mediterranean?

Through what part of Europe does the great Eurasian highland extend? What mountains and what plains are in the Danube basin? What mountains form the southern divide of this basin? What mountains extend south into the Grecian peninsula? What mountains traverse the Italian peninsula? What mountains are between the Alps and the Pyrenees? Name two ranges of the Spanish plateau. What mountains are in northwestern Europe? What group of large islands is near the west coast? By what is Great Britain separated from the mainland?

Supplemental Work. Sketch Europe, locating its chief mountain ranges, divides, rivers, seas, gulfs, bays, and islands. Model Europe.

United States became civilized through being overrun during the last 300 years by a vast number of highly civilized, white foreigners, most of whom used the English language. They largely replaced the native tribes. In Europe, on the contrary, it was the natives themselves who became civilized, and who, as the centuries passed, slowly developed the higher civilization that was carried to America. Among the peoples of Europe, as they gradually advanced in civilization, the native languages and customs were retained and improved.

The languages and customs of neighboring tribes were often somewhat similar but were quite different from those in distant regions, for few people traveled far from home in those days. It was only when some tribe conquered and settled among another people that distant

tribes mixed together. In such cases both of the old languages gradually disappeared, while from their blending a new language came to be used by the descendants of the mixed people.

Southwestern Europe. Name five countries of the European mainland which have a seacoast and which lie west of the Rhine and the Adriatic Sea. These are called Latin countries because the languages spoken in them are derived from the Latin language used by the ancient Romans.

The Latins were a people of Italy who early received civilization from the Grecian peninsula. They built Rome, which 2000 years ago was the largest and most magnificent city of the world. They conquered and taught the arts of civilization to all the tribes of Europe southwest of the Rhine, and added that region to the great Roman Empire.

The Christian religion was early brought to Rome, which is still the residence of the Pope, the head of the Catholic Church; and this form of religion still prevails in all the Latin countries.

Central Europe. Trace a straight line from southeastern Italy to North Cape. What seven countries lie wholly or mostly between this line and the Latin countries? Most of the languages in this region, as well as the English language, which is used in the British Isles, resemble the old German language, and so these countries are often called Germanic or Teutonic countries.

The Teutonic tribes remained barbarians long after the Romans had conquered the Latin countries, for the Romans could not subdue the Teutons, but were at last conquered by them. Then the barbarians overran the civilized Latin countries, but in doing so learned civilization from the conquered people. Two Teutonic tribes, the Angles and the Saxons, whose home was near the shores of the North Sea, crossed to Great Britain and settled in the southern part, which came to be called



VIKING SHIP FOUND BURIED IN NORWAY.

Angle-land or England, while the blended language of these settlers became Anglo-Saxon or early English. The tribes of the Scandinavian and Danish peninsulas were the fearless sea rovers called Northmen and Vikings.

Christianity was spread throughout central Europe by priests of the Catholic Church, but now the Protestant faith prevails in all the Germanic countries, except Austria, which is still mainly Catholic.

Eastern Europe. What great country occupies most of eastern Europe? What six countries occupy the southeastern part? The eastern part of Europe is called

Slavonic Europe, because nearly all of the languages used show a blending with the language used by the Slavs, a great tribe that once lived northeast of the Carpathian Mountains.

Most of eastern Europe received civilization through central Europe, and was thus the last part of the grand division to become civilized. It is not yet so highly civilized as the western half of Europe. By far the greater part of the population are Aryans, but there are many people of the Turkish branch of the yellow race in all these countries.

Throughout most of eastern Europe the Greek form of the Christian religion is the prevailing faith, but in Turkey and Bulgaria very many of the people are Mohammedans.

Government. While the governments of most American countries are republics in form, all but three of the governments in Europe are monarchies. The three exceptions are France, Switzerland, and Portugal. These are republics. In each the chief ruler is elected from among the people to hold office for a definite time. In the monarchies the ruler is an aristocrat or noble, is generally a relative of a previous ruler, and holds office for life. The European monarchies are all limited (§ 124) in greater or less degree.

Great Britain, Germany, France, Russia, Austria-Hungary, and Italy are the strongest and most populous nations of Europe, and are often called the "Six Great Powers."

INDUSTRIES AND PRODUCTS

Though all the great industries are pursued in Europe, by far the largest part of the working population is engaged in agriculture, manufacturing, and commerce.

Agriculture alone affords occupation to more than half the people. It is pursued in nearly all parts of Europe except in the extreme north and on the more rugged slopes.

In eastern Europe the light rains fall mostly during the summer, so that crops grow well; in the south, where the summers are dry, irrigation is practiced; and many of the steep hillsides in all regions are terraced and planted. More than twice as much land is cultivated as in the United States, and a much larger quantity of food is raised.

The great agricultural regions are (1) the central lowland from the Atlantic through southern Russia, and (2) the valleys of the Danube, Po, Rhone, and the streams of the Spanish peninsula. The central region, including the plains of Hungary, yields three fourths of the rye, oats, wheat, barley, and potatoes, and is the chief food-producing belt. Other crops of this belt are sugar beets, beans, cabbages,

and the fibers flax and hemp. In southern Europe large quantities of beans and much grain are raised, but the characteristic crop is the grape, for this is the world's greatest wine- and raisin-producing region. Other important crops are olives, oranges, lemons, figs, almonds, and chestnuts. Mulberry trees are also cultivated to afford food for silkworms, which are extensively reared.

Herding. There are four times as many sheep raised in Europe as in the United States; twice as many cattle, and about as many hogs; but only four of the countries of Europe produce more meat than the people consume.

The pastures and dairy farms are mostly in the central food belt, but some cattle and very many sheep and goats are pastured in the highland regions. Hogs are raised mostly in the forests, where they fatten on acorns, beechnuts, and other nuts.

Fishing. The product of the fishing industry is more than twice as great as in the United States. The most valuable fisheries are those of the northwest coast, which yield herring, cod, mackerel, and oysters. The southwestern coast waters afford sardines, anchovies, and tunny fish. The seas and rivers in the southeast



yield sturgeon, from the roe of which caviare is made.

The richest coral fisheries of the world are in the western half of the Mediterranean; and the most extensive sponge fisheries are in the eastern half of this sea.

Lumbering. The forests of Europe, though much more extensive than those of the United States, yield less than half as much lumber.

The chief lumber regions are northern Russia, the Scandinavian peninsula, and the wooded slopes of the Carpathian Mountains, but most of the highland regions in southern Europe are well wooded.

In nearly all the countries the forests belong to the ruler and to a few of the noble families, and are carefully preserved from destruction. Only a certain amount of timber may be cut each year, and young trees are planted to replace those that are cut down. The dead timber and fagots are gathered for fuel, and thus many of these cultivated forests have come to resemble great open groves, without underbrush and with the trees planted in rows.

Mining. All the useful minerals are found in Europe, and mining is an active industry in many of the countries, the mineral output being almost twice as great as that of the United States.

Coal and iron ore are obtained in nearly every country of Europe. Great Britain furnishes about half of

the coal, and much of the iron ore, and both minerals are mined extensively in the region north of the Alps and the Carpathian Mountains. Iron ore is also obtained from the Spanish and Scandinavian plateaus and from the southern Urals.

The Eurasian highland furnishes a large part of the world's supply of copper, zinc, and quicksilver, and some tin, lead, silver, and gold. Salt is obtained in many localities, and petroleum in great quantities along the southern base of the Caucasus, and in smaller quantities along the northeastern foot of the Carpathian Mountains.

Manufacturing. From the map below, tell what parts of Europe contain the most cities and towns (§ 143). The great manufacturing region includes the island of



Great Britain and the countries bordering the English Channel and the North and Baltic seas on the south. This region yields most of the coal and iron; in it modern machinery is extensively employed, and about two thirds of the manufactures are produced.

Except in this region, however, manufacturing is carried on chiefly by hand in Europe, so that though there are seven times as many workers, the total value of the manufactured product is only twice as great as in the United States.

The chief manufactures are (1) food products, including butter and cheese, olive oil, and beet sugar, besides wine and beer; (2) cloth; (3) clothing; (4) iron and steel, including machinery, ships, and other iron articles of all kinds; and (5) leather. Besides these, glass, porcelain, pottery, jewelry, woodenware, and nearly every other kind of article used by civilized man, are manufactured in Europe.

Commerce. The commerce of Europe is much greater than that of the United States, and foreign commerce forms a much larger share of the total than it does in our country. Most of the European countries are very small in comparison with the United States, and are

much more thickly peopled, so that they do not produce a sufficient variety or a sufficient quantity of articles for home consumption, and hence have to obtain many things from neighboring countries or from other grand divisions.

The chief imports from other grand divisions are such foods as tea, coffee, wheat, and meat, and the raw fibers cotton, wool, and silk. The fibers, when manufactured into cloth, form the chief exports to other grand divisions. Machinery, tools, cutlery, and other iron and steel goods are also exported.

Water routes are much more extensively used in Europe than in the United States. Nearly all the rivers have been rendered navigable and are connected by canals with neighboring systems. The Caspian and the Black seas have been thus connected with the Baltic, North, and White seas, and the Mediterranean with the Bay of Biscay and the English Channel. The shipping of Europe is four times as great as that of the United States, but its railroad system is not quite so extensive as that of our country.



Compare the distribution of railroads in Europe with the distribution of cities. Compare it with the distribution of railroads in the United States (p. 53).

Wealth and Earnings. With five times as many people, Europe has only about three times as much wealth as the United States; and the average daily earnings of the people are much less than in our country. This is largely owing to the fact that labor-saving machinery is less generally used in Europe than it is in the United States.

Supplemental Work. Make illustrations showing what part of the people of Europe practice agriculture; how the amount of cultivated land in Europe compares with that in the United States; how the cattle of the two compare; the fishing product; the extent of forests, and lumber product; the mineral output; the number of manufacturing hands, and the amount of the product; the shipping and railroads; the population and wealth.



United Kingdom of Great Britain and Ireland. The United Kingdom includes all the British Isles. By what waters are they surrounded? Name the largest island; the next in size; the waters between them. Name three groups north of Great Britain; one group south.

Name three great indentations of the east coast of Great Britain; four of the west coast; three on the west coast of Ireland. In what part of the British Isles are there highlands? Name the chief ranges.

What three countries are included in the island of Great Britain?

Describe the surface of each. Name four rivers of England; two of Scotland; three of Ireland.

The Grampian "Highlands," the Cheviot and Pennine hills, and the Cambrian Mountains make the northern, central, and southwestern parts of Great Britain uneven and in some parts quite rugged. A large part of England, however, and most of Ireland are smooth and level.

The climate is mild, moist, and equable (p. 110), and fogs are frequent.

The British Isles as a whole are densely peopled, and England is one of the most densely peopled countries in the world.

Nearly half the land is under crops, and much of the rest is suitable for pasturage. Cattle and sheep are raised, Great Britain producing more mutton and wool than any other country in Europe except Russia. Grain, hay, vegetables, fruits, butter, cheese, and beef are produced, but only a small part of the people are engaged in agricultural and pastoral pursuits, and food of all kinds has to be imported in large quantities.

Manufacturing is the chief industry, especially in England, and commerce and mining are also very active. In the value of manufactured products, Great Britain exceeds all other countries except the United States, and in the making of cotton and woollen cloth she greatly exceeds all other countries in the world. The coal and iron mines of the British Isles are chiefly in northern and southwestern England and in southern Wales. The coal fields yield about two thirds as much coal as those of the United States, and the iron and steel manufactures exceed those of any other country except the United States. Lead, tin, and copper ores are also mined, but not abundantly.

The manufacturing greatness of Great Britain depends chiefly upon her great supply of coal and iron ore. Raw materials — cotton, wool, hides, and iron ore — are imported

in large quantities from beyond sea. The importing of raw materials and food supplies, and the exporting of manufactured goods and coal, give rise to a foreign commerce nearly twice as great as that of any other country. This, besides much of the foreign trade of other countries, is carried on in British vessels; for Great Britain owns nearly half the shipping of the world.

Ireland is admirably adapted for agriculture, but much of the land is owned by people who live in England, and the laws have been unfavorable to the tenants. Still, about half of the people are engaged in farming, and they raise a surplus of grain, potatoes, butter, and eggs to send to Great Britain. In the northeastern part of the island large crops of flax are raised, from which the famous Irish linens have long been manufactured. Much wool is also produced, and made into cloth chiefly by the aid of water power.

In wealth the United Kingdom surpasses every other country except the United States.

The British have been the most successful colonizers in the world. During the last 300 years they have planted colonies in every one of the grand divisions, and in many islands of the sea, so that now the British possessions include about one fifth of the land surface and one quarter of the people of the earth. Canada is their chief American possession. Other important possessions are India, Australia, and southern Africa. The United Kingdom and the colonial possessions form the British Empire.

The supreme power of the empire is the law-making branch of the government, which is called *Parliament*. It is something like our Congress, and consists of a House of Lords composed chiefly of the nobles, and a House of Com-



THAMES EMBANKMENT, LONDON.

mons composed of members elected by the people who live in the British Isles. The king is called the head of the nation, but the executive department really consists of a prime minister and his associate ministers, who hold office during the pleasure of the House of Commons. *London*, the capital, is the largest city in the world. It contains about as many people as New York city and Philadelphia together. It is the world's greatest commercial and financial center. It lies on both banks of the Thames, which is crossed by many bridges. The harbor, formed by the broad estuary of the river, is fifty miles long. The trade is mostly with Asia and the European mainland, and the imports greatly exceed the exports. *Glasgow*, the second city of the kingdom in size, is the center of Scottish trade and manufacture. The chief manufactures are steel ships, machinery, cotton and linen cloth, carpets, and pottery. *Liverpool*, the third city, is an active commercial center, and the great sea-

port for the manufacturing region of England. The trade is largely with America, Australia, and South Africa, the exports being chiefly cloth and hardware, and the imports cotton, wool, and food stuffs.

The region across England from Liverpool is an almost continuous succession of great manufacturing cities. Among them the largest is *Manchester*, the world's greatest cotton-manufacturing center; *Leeds*, noted for its woollen



CONWAY CASTLE, WALES.



JAUNTING CAR, IRELAND.



HIGHLAND COTTAGE, SCOTLAND.



STREET IN A GERMAN VILLAGE.

manufactures; and *Birmingham* and *Sheffield*, noted for machinery, cutlery, and hardware. *Hull* is the important seaport for the trade of this region with the European mainland. *Newcastle*, on the Tyne, and *Cardiff* are great shipbuilding and iron-manufacturing centers and coal-exporting points. *Edinburgh*, the seat of the local government of Scotland, and *Dublin*, of Ireland, are important cities. *Belfast* is the center of the Irish linen manufacture and shipbuilding.

Supplemental Work. Read chapters 1-9, "Carpenter's Geographical Reader, Europe." Begin a scrapbook of clippings and pictures about Europe.

The German Empire. What seas and countries border the German Empire? (p. 123.) Describe its surface. Name five rivers of its northern slope; one of its southeastern slope. Locate its chief mountains. Compare it with the British Isles in area and population (p. 153); with Texas. What part of the United States is in the same latitude?

The southern half of the German Empire lies on the Alpine plateau, from which rise several groups of low and much worn volcanic mountains. The sandy lowlands of the north are covered with the drift of the old Scandinavian glacier and the wind-blown sands of the Baltic Sea.

The Rhine, the great river of Germany, has cut through the plateau a narrow, picturesque valley, whose steep side slopes are terraced for vineyards and are crowned with the ruins of old castles. In its lower course the river has a broad flood plain, which is covered with meadows and fertile fields.

About nine tenths of the land in Germany is productive. Large areas are devoted to the cultivation of grain, and the sandy soil in other places yields an abundance of potatoes and sugar beets. Much of the southern highland is covered with forests, and the river valleys are noted for their vineyards. Rye is the grain

most grown, and rye bread is the common food of the people. Many cattle, hogs, and sheep are raised.

Among European countries, Germany ranks first in the production of iron ore, second in coal production, and it exceeds all other countries in the world in the production of zinc. Copper, lead, silver, sand for glass, clay for porcelain, and salt are also obtained.

Like England, Germany is a great manufacturing nation. Much of the sugar used in Europe is made in Germany from the sugar beet. The manufacture of woollens, cottons, silks, and linens ranks next in importance. Iron and steel and all kinds of hardware are extensively made, especially in the west, and porcelain and wooden articles are also important manufactures.

Commerce is very active, the foreign commerce exceeding that of the United States. The network of railroads is complete. Nearly all the rivers are navigable and are connected by canals. A ship canal across the isthmus of the Danish peninsula connects the Baltic Sea and North Sea.

The German Empire consists of twenty-two separate states, the free towns of Lubeck, Bremen, and Hamburg, and the territory of Alsace-Lorraine. Prussia, the largest of the states, has more than half of the entire population. The King of Prussia is also the Emperor, or *Kaiser*, of Germany. The laws are made by an imperial parliament, consisting of a *Bundesrat* whose members are appointed from the various states, and a *Reichstag* composed of representatives elected by the people.

Many thousand Germans have settled in the United States, and German merchants are found in nearly all newly settled countries. The foreign dependencies of Germany include extensive regions in Africa, possessions in the Pacific, and a settlement in China.

The small **Grand Duchy of Luxemburg**, between Germany and Belgium, is declared by treaty between the Great Powers to be neutral or independent, but commercially it is very closely united with Germany.

Berlin is the capital and largest city of the empire. Because of its museums, libraries, and institutions of



PEASANT'S HOME, GERMANY.



PALACE, BERLIN.



BANKS OF THE ZUIDER ZEE, HOLLAND.

learning, the Germans call it the "City of Intelligence." On what river is *Hamburg*? *Stettin*? *Bremen*? They are the great ports of the empire. Find *Munich* and *Dresden*. They contain famous collections of pictures; and fine porcelain ware is made near Dresden. *Leipzig* is famous for its great book-publishing houses. *Breslau* and *Cologne* are cotton-manufacturing centers. *Essen* is the center of the iron and steel industry.

Supplemental Work. Read chapters 20-25, "Carpenter's Geographical Reader, Europe."

The Kingdom of the Netherlands, or Holland. Bound the Netherlands. What sea indents the coast? What river delta crosses the southern part? What is peculiar about the elevation of the western part of the kingdom? (p. 123.) Compare its area and population with those of Germany.

The soil of the Netherlands, or "lowlands," is composed chiefly of fine rock waste deposited by the Rhine, which makes very fertile farm and pasture land. Nearly half the surface of Holland is ten feet or more below sea level. This area has been reclaimed by dikes built to prevent overflow. The surface water of these lowlands is collected in ditches and canals, and pumped out by means of steam power and by hundreds of windmills. The many miles of canal serve as highways of travel.

Although grain has to be imported, there is a large surplus of dairy products, vegetables, flower bulbs, and flax for export. The fisheries are valuable.

Shipbuilding and the making of bricks and pottery give employment to a great many persons. Butter, cheese, sugar, starch, and linen and cotton goods are among the leading manufactures.

Holland has a large domestic and foreign commerce. The exports include not only home products and manufactures, but also the spices, coffee, chocolate, and other merchandise from colonies in the East and West Indies and in South America.

The people of Holland are called the Dutch. They are noted for their cleanliness, industry, and thrift.

Amsterdam is the largest city and constitutional capital. The houses are built on piles; and the canals which

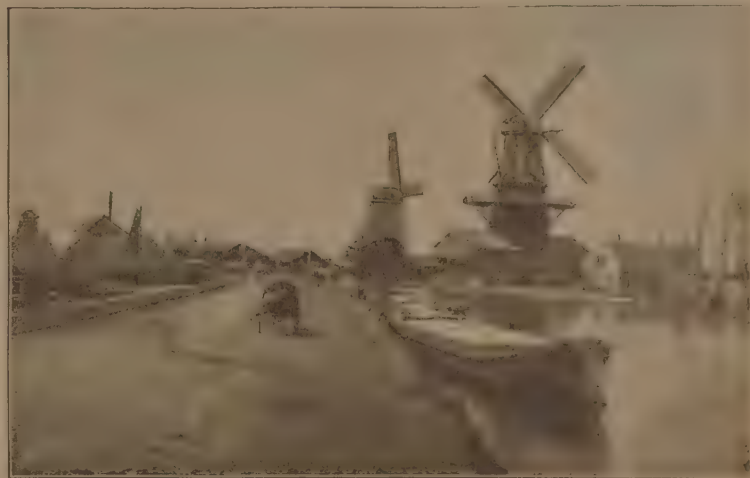
run through many of the streets divide the city into about ninety islands. *The Hague* is the actual seat of government.

Most of the foreign trade of the country passes through *Rotterdam*, which is one of the great seaports on the mainland of Europe.

The Kingdom of Denmark. Bound Denmark. Of what natural divisions of land is it composed? Name the peninsula; the largest island. Compare Denmark with New Jersey in area.

Denmark has a more hilly surface than the Netherlands. There are salt marshes in the west, and the coast is bordered by shifting dunes. Parts of the country are covered with beech forests; the soil is fertile, and farming, the raising of cattle and hogs, and dairying are the leading industries.

The country is celebrated for its butter, which, with meat, forms its chief export. Most of these products are shipped to Great Britain and Germany.



CANAL AND WINDMILLS, HOLLAND.

The Faroe Islands, northwest of the British Isles, with Iceland, Greenland, and three of the West Indies, are Danish possessions.

Where is *Copenhagen*? It is the capital, the great seaport, and the largest city of Denmark.

The Kingdoms of Norway and Sweden. What peninsula do these kingdoms occupy? (p. 114.) Describe their surface; their drainage. Compare their eastern and western coasts. Name their chief mountain ranges. On which slope are there most lakes? Name two of these lakes.

Norway is a mountainous plateau whose west coast is much indented with deep, narrow fiords. At the heads of many of these fiords glaciers descend to the sea. Sweden slopes gradually to the east, and is covered with glacial drift. Like New England, it abounds in lakes and waterfalls (pp. 16, 43).

Fishing and lumbering are the chief industries in Norway; and agriculture, dairying, lumbering, and the mining of iron ore in Sweden. The leading manufactures are wooden ware, hardware, and fish oil.

Most of the trade of these countries is with Great Britain and Germany. Their commercial fleet is large, but is largely engaged in the commerce of other countries.

The Norwegians, Swedes, and Danes are closely related, and are called Scandinavians. Many of the farmers in the upper Mississippi valley are natives of the Scandinavian lands. Norway and Sweden are the most sparsely settled countries of Europe.

Each country has its own king and parliament.

Locate the capital of each country. *Stockholm*, one of the most beautiful cities in Europe and the largest on the peninsula, is the great industrial center. *Gothenburg* and *Christiania* have cotton and woolen factories and lumber mills. *Bergen* is the center of a great fish trade.

Supplemental Work. Read chapters 15-19, "Carpenter's Geographical Reader, Europe."

Monarchy of Austria-Hungary. Bound Austria-Hungary. Name its mountain ranges. What river valley occupies its central part? Through what part of the country does the main European divide pass? On what waters does the only seacoast of the country border?

Mountain ranges traverse Austria-Hungary, and nearly inclose the low, fertile plains of Hungary. The Danube enters these plains through a gap which it has cut across the mountains; it leaves the plains through another similar gap called the Iron Gate.

Agriculture is the chief occupation, and grain, flax, hemp, olives, and grapes are raised. This is the only European country which has a surplus for export of all the great food products—grain, meat, dairy products, and wine.

The rearing of silkworms in the warmer parts of the country; the cutting of lumber in the east; and the mining of iron, coal, and rock salt in the north, are important industries. The northwest is a busy manufacturing region, in which cloth, steel goods, Bohemian glass, and porcelain are made. Weaving and spinning by hand are also



VILLAGE STREET, NORWAY.

done in all parts of the country, and much wine is made, especially in Hungary.

With its short seacoast on the Adriatic Sea, separated by mountains from the rest of the country, Austria-Hungary has comparatively little ocean commerce, but it has a large overland trade with surrounding countries, by railroad and by the Danube River.

Austria, which is chiefly Germanic and Slavonic, and Hungary, which is occupied

mostly by the Magyars (a people of the yellow race), are united under one monarch. Each state has its own constitution and parliament, and both appoint delegations which consider affairs of common interest.

The former Turkish provinces of *Bosnia* and *Herzegovina* now belong to Austria-Hungary, and the little *Principality of Liechtenstein*, between Austria and Switzerland, is practically a part of the monarchy.

Locate *Vienna*. It is a brilliant and beautiful capital, and the fourth city of Europe in size. It is a great educational and manufacturing center. *Budapest*, the capital of Hungary, is an important grain market and milling center. *Prague*, in the Elbe basin, is in the manufacturing region. *Trieste* is the chief seaport.



SWISS ALPINE COTTAGE.

The Republic of Switzerland. By what countries is Switzerland surrounded? Describe its surface. Name the two largest lakes in the Alpine plateau. What four great rivers receive drainage from Switzerland?

Switzerland is much visited by tourists in summer, because of its high, snow-covered mountains, its great glaciers, which creep down into the green valleys, its glacier-made lakes, and its beautiful waterfalls.

The land is utilized to the snow limit, largely for pastures, and cattle raising is a leading industry. While some grapes, grain, and vegetables are raised, much of the food is imported; but dairy products—cheese and condensed milk—are largely exported.



AUSTRIAN PEASANTS.



CENTRAL EUROPE

Scale, 133 miles to one inch, same as the maps of Northern Section, Southern Section, Plateau Section, Pacific Section, British Isles, and Southwestern Europe

SCALE OF MILES

The highlands above 2000 feet are shown in the buff tints, the lowlands above sea level in the green tints, and the lowlands below sea level in the purple tint



Switzerland is an active manufacturing region, although most of the articles are handmade. Almost every house is a miniature factory. Textiles, embroideries, plaited straw, watches and clocks, and carved wood are among the manufactured products.

Railroad routes follow the Rhone valley into France, and the Rhine and its branches into Germany and Austria, while railroad tunnels pierce the Alps and afford connection with Italy.

German language and customs prevail in the north, French in the west, and Italian in the south.

Zurich, the largest city, is a manufacturing town, producing chiefly leather and silk goods. *Basel* is noted for the manufacture of silk ribbons, and *Geneva* for watch making. *Bern* is the capital city and chief railroad center of the country.

Supplemental Work. Read chapters 26-30, "Carpenter's Geographical Reader, Europe."

SOUTHWESTERN EUROPE

The Kingdom of Belgium. By what countries and sea is Belgium bordered? (pp. 127, 114.) Compare it in area and population with the other countries of Europe; with Massachusetts.

Belgium is the most densely populated country of Europe. In the north the people speak Flemish, a Germanic language much like the Dutch. In the south the people are like the French in race, language, and customs.

The greater part of Belgium is a low, fertile plain, much like Holland. Agriculture is here the chief occupation. Grain, sugar beets, and beans are raised, yet nearly half the food has to be imported. Flax is an important crop. In the south the land is poor, hilly, and forest-covered, but contains rich mines of coal and iron, and here manufacturing is the leading industry. Belgium is famous for the manufacture of steel goods, hardware, and textiles.

Brussels is a fine city, noted for the manufacture of lace, carpets, linens, ribbons, and embroideries. *Antwerp* is one of the chief ports of continental Europe. *Liege*, in the iron and coal region,



PICKING GRAPES, FRANCE.

is noted for the manufacture of firearms, pottery, and glass. *Ghent* is the chief seat of cotton weaving and leather manufacturing in Belgium.

The Republic of France.

Bound France. Describe its surface, naming the mountains (p. 127). Trace through it the main European divide. What four rivers are on the northwestern slope? What river is on the southeastern? From the mouth of the Rhone trace a route by river and canal to Bordeaux on the Garonne; to Nantes on the Loire; to Havre on the Seine; to Strassburg on the Rhine. What large island is part of France?

France is one of the wealthiest nations of Europe. It is about twice as large as the British Isles, and is a much more important agricultural country. On the prairie lands of northern France about half as much wheat is produced as in the United States. Great crops of sugar beets, potatoes, and other vegetables are also cultivated, and many cattle and sheep are raised. The grape is a leading product of central and southern France. In the south, olives also are grown, as well as very many mulberry trees—for rearing silkworms is an important industry. In spite of its great agricultural industries, France is obliged to import both grain and meat, though there is a surplus of dairy products and wine for export.

There are several small coal fields and some iron mines in the east and north, but mining is not so important in France as in Great Britain or Germany.

Next to the British, the French are the chief cloth makers of Europe, and they are the foremost manufacturers of silks and velvets. They also make about one fourth of the world's product of wine. Among other important French manufactures are carpets, porcelain ware, steel goods, olive oil, confectionery, and fancy articles.

Among the countries of Europe, France ranks next after Great Britain and Germany as a commercial nation. Foreign commerce is carried on both by sea and by rail. Near Mont Cenis is a railroad tunnel through the Alps which gives access to the basin of the Po and northern Italy. The chief exports of France are wines, silks, velvets, woolens, and fancy articles; the chief imports are raw materials, metals, food stuffs, and petroleum.



HÔTEL DE VILLE (CITY HALL), PARIS.

The chief colonial possessions of France are in northern and western Africa, the island of Madagascar, and the eastern part of Indo-China. There are also colonies in the West Indies and South America, and in the Pacific.

Andorra, a small republic in the Pyrenees, is largely under the joint influence of France and a Spanish bishop. **Monaco** is a tiny independent principality near the southeastern extremity of France.

Where is *Paris*? It is the third city of the world in population, but it probably surpasses all others in magnificence and beauty. It is a great center of music, art, and learning. It is the chief railroad center of France, and has both railway and water communication with its port, *Havre*, at the mouth of the Seine.

Find *Marseilles*. It is the chief port of the Mediterranean. *Lyons*, an important industrial city on the Rhone, is the center of the silk manufacture. *Bordeaux* is the great shipping point for wines. At *Lille* linen thread and beet sugar are made. Find *St. Etienne*. It is in a region of coal and iron mines, and is the great iron- and steel-manufacturing city of France.

Supplemental Work. Read chapters 10-14, "Carpenter's Geographical Reader, Europe."

The Kingdom of Spain and the Republic of Portugal. What peninsula do Spain and Portugal occupy? Describe its location and surface. Locate the chief mountains. Trace the main divide. Name four rivers of the Atlantic slope; one of the Mediterranean slope. What part of the peninsula is occupied by Spain? by Portugal? The Balearic Isles form a part of Spain. How does the peninsula compare with the eastern United States in latitude? In what part is the population most dense? (map, p. 113.) Name the capital of each country.

The uplands and mountain slopes of the Spanish peninsula are dry, but afford pasturage for many sheep and goats and for smaller herds of cattle. Agriculture is confined to the moist seaward slopes and the deep river valleys, where irrigation is possible. Thus only about one fourth of the land is cultivated. Wheat, barley, and corn are raised, but not enough for home consumption. The grape, olive, and other fruits are extensively cultivated, as well as peas, beans, and other vegetables. The forests of cork oak furnish most of the world's supply of cork. The sardine and tunny fisheries of the coast waters are very valuable.

Mining is an important industry, and Spain leads Europe in the production of copper, lead, and quicksilver. The quicksilver mines of *Almaden* are among the richest in the world. Much iron ore is shipped from *Bilbao* in the north to Great Britain.

The manufactures for which the peninsula is famous are wine and raisins, and these, together with olive oil, dried fruits, canned fish, corks, and leather, are exported. Other manufactures are textiles, paper made from esparto grass, soap, and some metal goods.



SPANISH PEASANTS.

Spain ranks fifth among the European nations in shipping, but the vessels are mainly engaged in the coasting trade and in the fisheries; the foreign commerce is not large. There is an active domestic trade, however, both along the coasts and by the rivers and the canals and railroads which follow the river valleys through the plateau.

Spain once had large colonial possessions, which have now shrunk to a strip of the northwest coast of Africa, the volcanic Canary Islands off that coast, and some smaller west African possessions.

Besides the mainland portion, Portugal owns the Azores (p. 150), Madeira, and Cape Verde islands in the Atlantic; large parts of both the east and the west coast of Africa, and small tracts of coast in southeastern Asia.

Find *Madrid*, the capital of Spain. It is situated on the dry and barren plateau, and is the great railroad center and largest city of the peninsula. *Barcelona* is the manufacturing center and chief seaport of Spain. In *Valencia* are manufactured silk and velvet. This is the exporting point for fruits, oil, and wine produced in the fertile region behind it. *Seville*, a port at the head of tidewater on the Guadalquivir, has manufactories of silk and of iron. *Malaga* exports grapes, wine, and raisins.

Lisbon, the capital of Portugal, is the third city of the peninsula in size, and has one of the best harbors in the world. *Oporto* is a great shipping point for wine. The name "port" wine is a contraction of the name of this city.

The Kingdom of Italy. What countries and waters border Italy? What mountains border or traverse it? What river basin is in the north? What two great islands form part of the kingdom? Where is Mount Vesuvius? It is the only active volcano on the mainland of Europe, although Mount Etna, in Sicily, and Stromboli and Vulcano, on the Lipari Islands, are also active volcanoes.

Because Italy is sheltered by the Alps from north and northwest winds, it has an exceptionally warm climate for its latitude. The rainfall is abundant in autumn and winter, but the summers, especially in the south, are dry.

Much of the land is cultivated by the aid of irrigation, and about a third of the people are engaged in agriculture. Wheat, corn, and rice are grown, but grain also has to be imported. Vineyards are numerous and mulberry trees are cultivated; Italy is one of the greatest wine- and silk-producing countries in the world. On the slopes of the Apennines are chestnut and olive trees; figs, lemons, oranges, and citrons are also raised.

Wonderful crops of grass and other forage plants are produced in the Po valley, and so many cattle are raised that there is a surplus of meat for export. The fisheries furnish an important part of the food supply.

The most important mineral product of Italy is sulphur, from the sides of the volcano Mount Etna. Zinc and

lead are also mined. Excellent iron ore is obtained on the island of Elba, and fine marble is quarried on the mainland. Coral is obtained from the coast waters.

More than one fourth of the people of Italy are engaged in manufacturing. Silk is reeled from the cocoons by hand, and much of the fiber is woven on hand looms. Other important industries are the making of wine, macaroni, glass, and mosaics, and the cutting of coral and shells for jewelry.

Most of the foreign trade is carried on by railroads, which pass through several tunnels in the Alps. The chief exports are raw silk, wine, olive oil, and sulphur.

Italy has colonial possessions in East Africa, but it is not a great colonizing country. Many Italians emigrate to Argentina and Brazil, and to the United States.

San Marino is a small independent republic in eastern Italy.

Locate Rome. It is the capital, and, because of its ancient greatness, the most famous of Italian cities. Among its noted buildings are the Pope's palace, called the Vatican, with its magnificent collection of paintings and statuary; St. Peter's, the largest church in the world; and many famous ruins.



COLONNADE OF ST. PETER'S, AND (BEYOND THIS) THE VATICAN, ROME.

Find Naples, the largest city of Italy. It is the commercial center of the kingdom, and one of the most crowded cities of Europe. *Milan* and *Turin* are large and beautiful cities, and the commercial and manufacturing centers of northern Italy. *Palermo*, *Genoa*, and *Venice* are important seaports. Genoa is famous as the birth-place of Columbus. Venice is built on a number of small islands, and its main thoroughfares are canals instead of streets. *Florence* is noted for its art treasures and its romantic history.

Supplemental Work. Read chapters 40-46, "Carpenter's Geographical Reader, Europe."

EASTERN EUROPE

The Kingdom of Greece. By what country and waters is Greece bordered? (p. 114.) The kingdom includes some islands on the west coast, and the Grecian or Ægean Archipelago to the east.



RUINS OF THE PARTHENON, ATHENS.

Greece is divided by mountains into many small valleys. Its few rivers are rapid mountain streams and of little use for inland trade, but its deeply indented coast affords good harbors.

The land is owned largely by the peasants themselves, but they display little skill in its cultivation. The products are similar to those of Italy. Small dried grapes known as *currants*, iron ore, olive oil, and figs form the principal articles of export. The Greeks are good sailors, and much of the commerce of the Black and Mediterranean seas is conducted by them. Shipbuilding is an important industry. Most of the fine sponges of commerce are gathered from the eastern part of the Mediterranean Sea, and cured by Greeks.

Since the days of its early greatness, Greece has for long periods been under the rule first of Teuton barbarians and then of the Turks. Under the dominion of these foreign peoples it has been sadly reduced both in wealth and in culture.

Athens, the capital, is a growing commercial city. It



VENICE.



SOUTHWESTERN EUROPE.

Scale, 133 miles to one inch, same as the maps of Northern Section, Southern Section, Plateau Section, Pacific Section, British Isles, and Central Europe.

The highlands above 3000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental platform in the light blue tint.

SCALE OF MILES

0 50 100 150 200 250 300



CONTINUATION OF ITALY

contains relics of former splendor, among them the ruins of the Parthenon, a famous ancient temple.

The Empire of Turkey. By what countries and waters is European Turkey bordered? (p. 114.) This is but part of the Turkish Empire, which extends over southwest Asia and part of northern Africa, and claims Egypt as a tributary state. Name and locate the capital of the empire. The entrance to what sea is controlled by Turkey? Through what straits and what sea is this entrance?

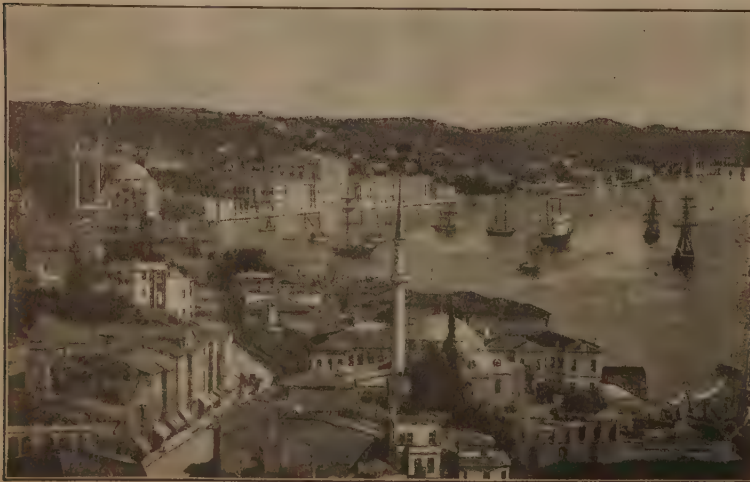
Turkey receives its name from the Turks, a people of the yellow race who, about 500 years ago, extended their Asiatic empire over a large part of southeastern Europe. Their European territory has been gradually taken from them until now it is not so large as the state of Missouri. It contains nearly twice as many people, however. The population is very mixed, consisting of Turks, Greeks, Slavs, and Gypsies. The ruler, called the *sultan*, has great power, but now his subjects are allowed to take some part in the government. The officers of the government are often dishonest and cruel in collecting the heavy taxes.

In Turkey more land is devoted to pasture than to farming, and the agricultural methods and implements are very rude. Grain, tobacco, cotton, grapes, and tropical fruits are grown. Manufactures are few. Carpets, cloth, and jewelry are made by hand. The trade is conducted mainly by Greeks, Jews, and Armenians. Raw materials, wine, and food are exported in exchange for manufactured goods. There are few railroads in the country, and roads are bad, so that domestic trade does not flourish.

Constantinople, the capital, commands the entrance to the Black Sea and is considered a key to the military control of eastern Europe. It is a large city, with many beautiful mosques, or Mohammedan places of prayer, but most of the streets are unpaved and filthy. *Saloniki* is an important port, with a large Jewish population.

Crete, though nominally subject to Turkey, is really self-governing under the protection of the Great Powers. The population is chiefly Greek.

The Minor Balkan States. Name the four states between Turkey and Austria (p. 114). All these states formerly belonged to Turkey,



ALONG THE BOSPORUS, CONSTANTINOPLE.

but each is now independent. Which of them lie in the Danube basin? Which border on the Black Sea? Which borders on the Adriatic Sea? Which has no seacoast? By what mountains is each bordered or crossed?

In the **Kingdom of Roumania** and the **Kingdom of Bulgaria** agriculture is the leading occupation, and both countries export wheat, corn, and wine, cattle and sheep. The imports are manufactured goods, chiefly from Austria. Roumania is so named because it was settled by the ancient Romans. Bulgaria was settled by people of the Turkish type of the yellow race. Both countries are now peopled largely by Slavs. What is the capital of each country? Bulgaria, though formerly tributary to Turkey, is now independent.

The **Kingdom of Serbia** and the **Kingdom of Montenegro** are less advanced in industry than Bulgaria and Roumania. Both are mountainous, forest-covered coun-



PEASANT'S CART, TURKEY.

tries. Hogs fatten in the forests, and grain and wine are produced. What is the capital of each country?

Supplemental Work. Read chapters 31, 37-39, "Carpenter's Geographical Reader, Europe."

The Empire of Russia. Is the greater part of the Russian Empire in Europe or in Asia? (map, pp. 130, 131.) About five sixths of the people, however, live in European Russia. How does European Russia compare with the United States in extent? in population? (p. 153.) What two mountain systems are on the borders of European Russia? (p. 114.) What ocean, seas, and rivers? What countries? Describe the surface of European Russia; its drainage.

The surface of European Russia, like that of our Prairie plains, is very smooth and flat. In the north are hills of glacial drift and many lakes, for this region was once covered by the Scandinavian glacier (§ 60). In the extreme southeast are many small salt lakes.

In the north the winters are long and very cold, and even in the south the winters are severe, though the summers are hot. The rainfall, though not abundant, is sufficient for crops except in the extreme southeast.

Fishing, hunting, and lumbering are pursued in the north, but the great industry of Russia is farming. Much



RUSSIAN SLEIGH.

more grain, meat, and wool are raised than are consumed at home. They are produced chiefly in the south central part. More wheat is grown than in any other country except the United States, and a large part of it is exported. Rye is extensively grown, and rye bread is largely used by the poorer people. Sugar beets, tobacco, and flax are widely cultivated, and in the south are many vineyards. The flax is raised both for the linen fiber and for the seed.

The peasants or farmers live in village communities, or *mir*s. The land around a village is owned or rented by the whole mir. It is portioned out to each family according to the number of its members, a large piece being reserved as a common grazing ground.

Platinum, gold, and some coal and iron ore are mined in the southern Ural Mountains, and coal in central and southern Russia. Salt is obtained from the salt lakes in the southeast. Near Baku, on the west coast of the Caspian Sea, are petroleum wells which, with those of our country, produce most of the world's supply of kerosene.

In the large cities, alcohol, cloth, machinery, beet sugar, flour, and leather are made. A great deal of manufacturing is carried on by the peasants in their homes. The rivers are connected by canals and are much used as commercial routes. Western Russia is moderately well supplied with railroads (p. 117). Much trade is carried on at annual fairs, where merchants bring their goods from great distances. The largest fair is held at Nizhni Novgorod.

Most of the people are Slavs, but the Lapps and Finns in the northwest, and the fierce Cossack horsemen in the southeast, are people of the yellow race. There are also many Jews.

The Emperor, or *Czar*, of Russia, long an absolute monarch, has recently granted to the people some share in the government through a representative assembly, called the *Duma*.

Locate *St. Petersburg*, the capital. It is in a desolate, marshy region, where the ground and harbor are frozen for several months in winter. It is a magnificent city of palaces and varied industries, and has many manufactories. It is entered by several railways, and a ship canal leads through the shallows of the Gulf of Finland to the spacious harbor.

Find *Moscow*. It was once the capital of Russia, and is a manufacturing city of importance. *Warsaw*, the chief city of Poland, is another important center of manufacture and trade. *Odessa*, situated on the Black Sea, is a flourishing modern city, and the chief wheat-shipping port of the country. *Kief* and *Kharkof* are large trade centers of the agricultural region of southern Russia; and *Riga*, near the Baltic Sea, is the chief northern seaport.

Supplemental Work. Read chapters 32-36, "Carpenter's Geographical Reader, Europe."

TOPICS ON EUROPE

I. EASTERN EUROPE. Balkan states: governments; people — history, races, religions, condition; products. Russia: extent; government; people; climate; products.



MOSCOW.

II. NORTHERN EUROPE (countries wholly or mostly north of 50° N. Lat.). Peninsular: countries; governments; people — race, density, history, occupations; products; climate. Continental: countries; governments; people — race, density; occupations; products; soil. Insular: divisions; possessions; people — density, history, occupations; products.

III. SOUTHERN EUROPE. Peninsular: countries; governments; people — race, history, occupations; products; climate. Continental: countries; governments; people — races, history, occupations; products — western, central, eastern.

IV. EUROPEAN TRADE. Routes of trade: by sea; by rivers and canals; by land. Products imported; products exported. Chief carriers.

V. EUROPEAN CITIES. Capitals: each pupil may describe one. Seaports: each pupil may describe one. Manufacturing centers: each pupil may describe one.



EURASIA

Scale, 600 miles, to one inch,
same as the maps of North America,
South America, Africa, and Australia.



PHILIPPINE ISLANDS

Scale of miles from 0 to 200.

ASIA

Review of Physical Features and Life (pp. 109-113).

What physical features are often considered boundaries separating Eurasia into the two grand divisions of Europe and Asia? How do these divisions compare in size? Name the oceans and ocean arms which border the northern, eastern, and southern coasts of Asia. Locate five peninsulas of Asia, and name the waters they separate. What three island groups are off the east coast? Name three great rivers of the Arctic slope; four of the Pacific slope; four of the Indian Ocean slope. Is the interior region between the basins of these rivers entirely highland? Explain the relation between the rainfall and the drainage of this interior region. Describe briefly the great highland of Asia, its extent, altitude, mountain ranges, climate, and surface peculiarities. Describe the great northern lowland; Pacific slope; Indian Ocean slope.

Locate and describe briefly the characteristic forms of vegetation in the northern lowland of Asia; the characteristic forms of animal life. Describe the distribution of life forms in the highland region; on the southern and southeastern slopes of Asia. Locate the three races which inhabit Asia. Locate four peoples of the white race; two peoples of the yellow race. Compare Asia with Europe in population; with North America. Locate the two great regions of very dense population in Asia. More than three fourths of all the people in Asia live in these two regions, and about half the remainder live on the islands to the east and south-east. In what stage of culture are most of the people in Asia?

PEOPLE

Civilization. More than half the people in the world live in Asia. Some of them have advanced greatly in civilization, while the greater part are somewhat civilized, though their condition is as rude and imperfect in many particulars as that of Europe was a thousand years ago. It is very different, however, from the early European civilization, and the languages, habits, dress, and manners of the peoples of Asia seem strange to us, who have received our civilization from Europe.

Throughout most of Asia the women are considered as little more than servants or slaves. They are seldom educated, and in some countries are bought and sold. Some of the native people have learned to recognize the value of steam and electricity and of modern machinery and implements, but in many parts of Asia nearly everything is still done by human labor or by that of domestic animals. As such labor yields little profit, the great mass of the people are wretchedly poor. In the moist regions of the southeast, where the food is mainly vegetable and fairly plentiful, the population is dense. But even there, when the crops fail, a terrible famine occurs and thousands of people starve, because of the lack of facilities for transporting food to them. Many of the railroads are in the hands of the Europeans who have settled in Asia.

Commerce. Because of the lack of improved implements and means of transportation, the products and commerce of Asia are slight in comparison with its large population. Although there are more than twice as many people in Asia as in Europe, the foreign commerce is but one sixth as great as that of Europe, and is less than that of the United States.



Most of the foreign commerce is carried on by the countries and islands in the southeast and east, which have ample rainfall and dense population.

Governments. The native peoples on the mainland of Asia are just beginning to learn how governments may be conducted for the benefit of the people. Until our own day most of the countries were absolute monarchies, as those of Europe were a thousand years ago. The ruler had almost unlimited power over the lives and property of his subjects, whom he often treated unjustly.

The people of the island empire of Japan are the most progressive native people of Asia. They have adopted a limited monarchy as their form of government. Persia also has become a limited monarchy, while China favors the republican form of government. India, in southern Asia, which belongs to Great Britain, and Anam, which belongs to France, are each governed by Europeans sent out from the home country. The United States, the Netherlands, and Great Britain control the islands between the Empire of Japan and Australia.

Religion. Mohammedanism is the prevailing religious faith in southwestern Asia, although there are many Christians and Jews in Asia Minor. In India the mass of the people believe in Brahmanism, but there are also very many Mohammedans, and Mohammedanism is the prevailing religion in the East Indies. In Indo-China, China, and Japan most of the people are Buddhists, while in Siberia the Greek form of the Christian religion prevails.



MOHAMMEDAN MOSQUE, BOKHARA.

southern Siberia are broad tracts of fertile grain land, and grassy plains which furnish pasturage for thousands of cattle and horses. Gold, coal, iron, and other minerals are found along the edge of the highland.

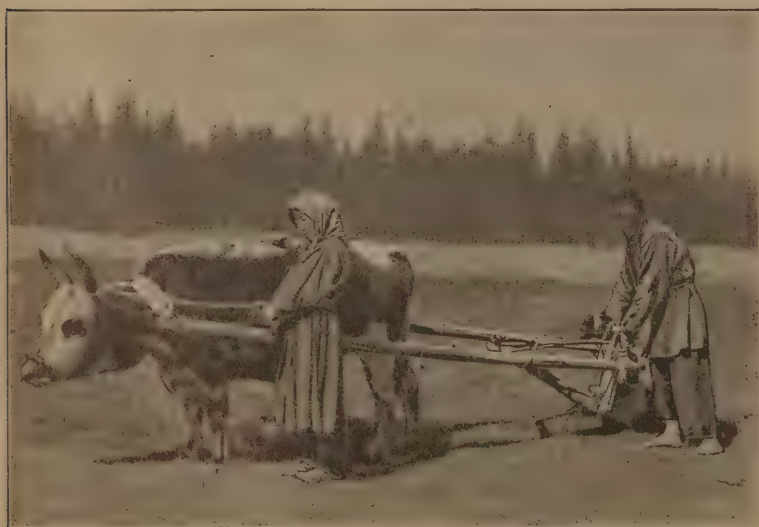
Branches of the great Siberian rivers rise so near to one another that they form a natural water way with short portages, far through the interior. It is mainly by this route that the more distant provinces are reached, though a railroad from St. Petersburg to *Vladivostok* and Peking traverses this region, passing through *Omsk* and *Irkutsk*, the principal trade centers of Siberia. All along this railroad towns are growing rapidly, and the country is being settled with emigrants from European Russia who are attracted by cheap land.

Siberia is yet very sparsely populated. It contains fewer people than the state of Pennsylvania. Most of the inhabitants are immigrants from European Russia. Some were sent as exiles, who have remained in Siberia after their sentences have expired. There are also many small wandering tribes of natives.

The greater part of the **Kirghiz Steppe**, which lies southwest of Siberia, is dry and barren. The few people who live there raise cattle or cultivate the oases that occur here and there in the great plain. Farther south, in **Russian Turkestan**, the land is better watered and better tilled. Here not only are cattle raised, but grain, cotton, and fruit are cultivated, and much raw silk is produced. *Tashkend* is an important center of trade and domestic manufacture — chiefly of silk and leather goods.

Transcaucasia, west of Caspian Sea, is separated from European Russia by the Caucasus Mountains. It is about twice as large as the state of Pennsylvania, and contains about as many people as the whole of Siberia. Many European Russians have recently settled in both Russian Turkestan and Transcaucasia.

Wheat, corn, and barley are raised in Transcaucasia. Much petroleum, refined near the *Baku* wells, is shipped into Russia by the Caspian Sea and the Volga River, and



YAKUT NATIVES PLOWING, EASTERN SIBERIA.

COUNTRIES

Asiatic Russia. Describe the boundaries of Asiatic Russia. What is the name of the greater part of it? Find the distance in miles from the Ural Mountains to the Sea of Okhotsk. Describe the surface of Siberia. Name three great rivers of the Arctic slope; one of the Pacific slope. Why are there no seaports on the northern coast?

The summers of **Siberia**, though short, are so warm that grain ripens almost as far north as the Arctic Circle; but the winters, even in the south, are very cold. In

much is conveyed to *Batum*, whence it is shipped to other countries. *Tiflis* is the largest city of Asiatic Russia.

Bokhara and Khiva are small states under native rulers who are vassals of Russia. Handmade rugs and carpets from these states are sold throughout Europe and the United States.

Supplemental Work. Read chapters 11 and 36, "Carpenter's Geographical Reader, Asia."

Asiatic Turkey. What waters form part of the boundaries of Asiatic Turkey? What countries border on it? By what is it separated from European Turkey? Where are its mountains? Name its rivers and describe its drainage.

The valleys of Asiatic Turkey once yielded large quantities of grain and other products, and contained a large and powerful population, but under the rule of the Turks the whole country is in a state of decay.

About half of the people are Turks; the rest are chiefly Arabs, Armenians, Greeks, and Jews. The raising of sheep and goats is the leading occupation. The wool is woven by hand into carpets and rugs, and



GOVERNMENT OFFICERS, BOKHARA.

and are green with vegetation. Most of the coast region is a part of the Turkish Empire.

The interior is independent, and its people have made little advance in many centuries. There is no central government, but each tribe is ruled by its own chief, or *sheik*. The Bedouins, or desert Arabs, live in tents and move from place to place with their herds of camels and horses as the seasons change. Other Arabs live in villages, cultivate the soil, and carry on a limited commerce. The land, wherever it is irrigated, yields abundantly, and dates, indigo, coffee, and barley are produced. These, with myrrh, gum arabic, and pearls, are the chief exports.

The chief seaport is *Aden*, which belongs to Great Britain. It is an important coaling station for steamers.

Oman is a native state under the influence of Great Britain. *Maskat*, the capital, is a seaport of some importance, from which dates and other fruits and pearls are exported. In the Persian Gulf are the richest pearl fisheries in the world.

Persia. What waters partly surround Persia? What countries border on it? Describe its surface and drainage; its climate.

Persia lies chiefly on a hot desert plateau. Along the coasts the date palm flourishes, and there are fine forests



TURKISH MERCHANTS.

the goats' hair into shawls. In the fertile parts of the country figs and dates are grown, and some cotton, tobacco, opium, and raw silk are produced.

Locate the seaport of *Smyrna*, and the cities of *Damascus* and *Bagdad*. These are the chief commercial centers of Asiatic Turkey, and were all famous in olden times. Bagdad serves as a port for Persian trade. *Beirut* is the port for Damascus, and exports much silk.

Jerusalem was the holy city of the Jews, and the scene of many events described in the Bible. *Mecca* is noted as the birthplace of Mohammed.

Arabia. What waters partly surround the Arabian peninsula? To what country does most of the coast land belong?

The greater part of the peninsula is a desert plateau more than half a mile above the level of the sea. Although there are no great rivers in Arabia, there are several large oases which are watered by short streams



BEDOUINS AND THEIR TENTS, ARABIA.



PERSIAN RUG MARKET.

of cedars, elms, and oaks. All kinds of fruit grow in the lowlands. Wheat, barley, rice, cotton, and opium are cultivated. The raising of cattle, sheep, and camels is the chief business of many of the people.

Handmade rugs and carpets and camel's-hair cloth are almost the only manufactures. Trade is carried on by caravans. There are few good roads. The principal exports are opium, pearls, rugs and carpets, and dates.

Besides the Persians, there are many Arabs, Armenians, and Turks in the country. The caravan trade is controlled mainly by Arab merchants; the foreign trade, by the Armenians. The *Shah* of Persia, like the Czar of Russia, has recently granted the people some share in the government.

Teheran, the capital, and *Tabriz* are the chief centers of the caravan trade. *Ispahan*, the former capital, has great bazars and magnificent palaces. *Bushire* and *Barfrush* are the most important ports.

Afghanistan. What countries surround Afghanistan? Describe its surface and its drainage.

Afghanistan is a mountainous region with fertile valleys where crops are raised by the aid of irrigation. Wheat and barley are harvested in summer, and rice, millet, and corn in autumn. Fruits and drugs are produced.

The population of Afghanistan is made up of many tribes, mostly of Aryan descent, all loosely united under a ruler called the *ameer*.

Next to agriculture and stock raising, the chief industries are the making of silk goods, felts, and rugs and carpets. Besides these products, horses, spices, and fruits are exported.



NATIVES OF AFGHANISTAN.

Herat, *Kandahar*, and *Kabul*, the capital, are fortified towns and centers of considerable caravan trade.

Baluchistan. By what countries and sea is Baluchistan bordered? Describe its surface and climate.

Baluchistan is about half as large as the state of Texas. It is governed by a native ruler, or *khan*, who is under the control of the British government in India. The people are very similar to those of Afghanistan. The wandering tribes are engaged in raising camels, horses, sheep, and goats. *Khelat* is the capital.

Supplemental Work. Read chapters 32-35, "Carpenter's Geographical Reader, Asia."



SHOEMAKERS, PERSIA.

India. Bound India (p. 130). Describe the surface and drainage of Hindustan; of the Dekkan (p. 108). What two rivers of India rise north of the Himalayas? Name a branch of the Indus. Where is the Ganges River? Name two rivers of the Dekkan.

India has mountain ranges in the east and west, great lowland plains in the north, and the plateau of Dekkan in the south. The highest mountain range in the world forms part of the northern boundary. The climate is hot except on the highlands, and the southwest monsoon brings heavy rains in summer to the Western Ghats and to northeastern India. Much of the Dekkan and of northwestern India are dry.

India is about half as large as the United States, but its population is more than three times as great. The people are mostly Hindus, a dark-skinned people of the Aryan branch of the Caucasian race.



BULLOCK CART, INDIA.



ELEPHANTS WORKING, INDIA.



NATIVE BARBER, INDIA.

The British have gained control over nearly all the native states, and now govern almost the entire country, although there are comparatively few British people in India. A British governor general, or viceroy, lives in India.

There was a Hindu civilization long before the arrival of the British. The Hindus had a written language, an ancient literature, and a highly organized system of society. The people are divided into *castes*, or fixed classes. A Hindu must live, marry, and die in the same class and follow the same occupation as his father; consequently the Hindus have made little progress for a long time. The houses of the low-caste people are small and miserable hovels, without floors and with little or no furniture. The farming implements and methods are of the rudest description, and the flour or meal is generally ground by hand.

The population of India is most dense in the great northern plain drained by the Ganges, and in those parts of southeastern Dekkan where irrigation is successful. It is least dense in the dry and barren parts of the Indus valley.

Most of the people live by agriculture, raising millet and rice for their own use, and various other products for export. Rice, jute, and bamboo grow in the delta of the Ganges. Farther up the river the mulberry and the opium poppy are cultivated. Cotton, wheat, and pepper are grown in the Dekkan, where there are also large plantations of coffee. Tea and the cinchona tree from South America are cultivated on the Himalaya foothills. In the valley of the Brahmaputra the growing of seeds for making oil similar to linseed oil is one of the most important industries.

Many miles of irrigating canals have been dug in the Ganges valley, and reservoirs have been built in the Dekkan to supply water in

times of drought. Yet the rainfall is so irregular in many districts that terrible famines sometimes occur on account of the failure of the crops.

Manufacturing is being rapidly developed by the Europeans, and cotton, woolen, and jute goods, and paper are made. There are some iron mines in India, and many coal mines, but there are few manufactures of iron. Most of the manufactured goods—fine cottons, silks, gold embroideries, cashmere shawls, carved ivory, jewelry, beautiful rugs, and embroidered leather goods in great variety—are still made by hand by the native workmen.

The British have caused good roads to be constructed in nearly all parts of the country, and have built about 30,000 miles of railroad. These are the chief means of transportation; for the rivers, the lower Ganges excepted, are not extensively navigated. Elephants, camels, buffaloes, and zebus are used as beasts of burden.

The foreign commerce of India is about one third that of all Asia. About half of it is with Great Britain, and much of the remainder with China. The principal exports are cotton, jute, rice, oilseeds, opium, tea, hides, and wheat. Cotton cloth, machinery, ironware, and refined sugar are the chief imports.

Calcutta, in the great delta region of the Ganges-Brahmaputra river system, is the capital and chief seaport of India. *Bombay*, the largest city on the western coast, is important as the chief port for the shipment of Indian cotton. *Madras* and *Haidarabad* are great centers of trade; and at Madras is manufactured much fine cotton cloth called "madras" after the name of the city. *Lucknow*, *Benares*, and *Delhi* are large cities.

Nepal and *Bhutan* are native monarchies under British influence in northern India.

Ceylon is a separate British colony. The chief products of the island are tea and cocoanuts. *Colombo* is the chief city.



STREET IN COLOMBO, CEYLON.



VILLAGE STREET, BURMA.

The Countries of Indo-China. What divisions of British India lie east of the Bay of Bengal? What narrow peninsula extends still farther south? What British possession occupies the southern part of the Malay peninsula? What country comprises the eastern part of Indo-China? What is the country in the central part called?

Name the chief rivers and gulfs of Indo-China. In what direction do the mountain ranges extend?

Indo-China is traversed by mountain ranges and is largely forest-covered. Most of the people are Mongolians, but there are many Malays in the south. In the valleys and river deltas the population is very dense.

The chief products of Indo-China are rice, sugar, spices, lumber, and tin. The other mineral resources have not yet been largely developed. The foreign commerce is conducted almost entirely by Europeans, but the local merchants are Chinese.

Upper and Lower Burma are part of British India, but the **Straits Settlements** form a separate British colony.

Anam, with **Tonkin**, **Cambodia**, **Cochin China**, and the **Laos** territory, is under the control of the French, though Anam and Cambodia have native rulers.

Siam is a native kingdom. It is important as an inter-boundary or "buffer state" between British and French possessions.

Bangkok, the capital of Siam, is built partly on piles and rafts in the Menam River. **Rangoon** and **Mandalay** are the principal cities and trade centers of Burma. The shipments of rice and teak wood are important. **Hanoi**, in Tonkin, is the seat of government for French Indo-China. **Singapore**, in the Straits Settlements, exports spices, gums, and the larger part of the world's supply of tin, and is a very important port of call.

Supplemental Work. Read chapters 19-30, "Carpenter's Geographical Reader, Asia," and Chapters 36-37, "Carpenter's Australia," etc.

China. In what part of Asia is China with its dependencies? What waters border on the east? What mountains are on the south-western border? on the northwestern border? What plateau forms the western part? the northern part? What are its two great rivers? Into what does each flow? Where is the Grand Canal? Besides China proper, what four other countries are Chinese dependencies?

China proper has broad fertile river plains and valleys, and abundant summer rains, and contains about nine tenths of the population of the Chinese possessions.

The Yangtze is navigable for hundreds of miles by the largest ocean steamers. This river, with its tributaries and the Si River in the south afford the principal means of communication in the interior. The Hoang is loaded with sediment and is so obstructed by sand bars that it is not navigable. It often overflows its banks, causing widespread disaster, and several times it has changed its course entirely.

The Grand Canal connecting the Hoang and the Yangtze was built more than a thousand years ago, and is still much used as a highway. There are several other canals. Several thousand miles of railroads have been built, and others are now under construction. The roads are poor and, away from rivers and canals, goods are carried for the most part on the backs of porters.

The people are Mongolians. Buddhism forms part of the prevailing religion, but the Chinese are especially devoted to the worship of ancestors. This has made the people unwilling to leave the ways which their ancestors followed; hence the Chinese have been suspicious of foreigners and slow to adopt foreign customs. It was not until near the middle of the nineteenth century that they would trade with other nations. Yet the Chinese were among the first people in the world to become civilized. Of late years they have come more in contact with other nations, which has resulted in the adoption of many of the customs and inventions of modern civilization.

The government was for many centuries an absolute monarchy. Recently a revolution, the object of which was the establishment of the government as a republic, was successful in overthrowing the monarchy.

Education is general among the men, but neglected among the women. The language has no alphabet; each written character stands for a syllable or word, and a Chinese boy must learn to know several thousands of these characters by sight.



GOLDEN PAGODA, RANGOON, BURMA.

Agriculture is the chief occupation. Wheat and millet are grown in the north, while in the south rice is the principal crop. China exceeds all other countries in the production of tea and raw silk.

Coal is found in many parts of China, but is not extensively mined, though it was used as fuel by the Chinese long before its value was known in Europe. There are also rich deposits of iron and copper, which with improved methods of mining may be made very productive.

Foreign trade is largely with Great Britain, Japan, and the United States, and is confined to certain cities opened by treaty to foreigners. Tea and silk are the most important exports. Beautiful hand-woven silk, raw cotton, lacquered ware, and ivory carvings are also exported. Cotton cloth and other manufactures are the principal imports.



CHINESE COOLIES CARRYING COTTON YARN.

China has many large cities, but their streets are narrow, unpaved, and filthy. The houses are low and built mostly of bamboo or of sun-dried brick, with earthen floors and paper windows, and without fireplaces or stoves. *Peking*, the capital, is the center of a large caravan trade, chiefly with Siberia, and is supposed to have a population somewhat larger than that of St. Louis. *Tientsin* is the seaport of Peking. *Canton* and *Shanghai* are the chief ports of American trade. *Hankau* and *Hangchau* are both large cities.

Tibet. The people of the high Tibetan plateau belong to the yellow race. They carry on a considerable caravan trade with lowland China and some little with India through passes in the Himalayas. The chief products are silver, gold, salt, wool, and borax. A little woolen cloth is woven. It is almost impossible for Europeans to enter any part of the country. *Lassa*, the capital, was so jealously guarded that until recently very few white men have been admitted within its walls.

Chinese Turkestan is inhabited by wandering tribes, who are but partly civilized, and are engaged in herding.



GREAT WALL OF CHINA.

Mongolia is an extensive, arid, and sparsely peopled region. The chief wealth consists of herds of camels, horses, and sheep.

Manchuria is a fine farming region. Wheat, beans, tobacco, live stock, and lumber are important products. Coal is mined and other minerals are found. *Mukden*, the capital, is the center of considerable trade. *Harbin* is an important center of trade between Russia and China. Russia built railroads through Manchuria to Vladivostok and *Port Arthur*, but Port Arthur and part of the railroad are now controlled by Japan.

Hongkong, an island which was ceded by China to Great Britain, is the center of a large foreign trade. **Kiauchau** has been leased by China to Germany; **Weihaiwei**, to Great Britain; **Kwangchau**, to France. **Macao** belongs to Portugal.

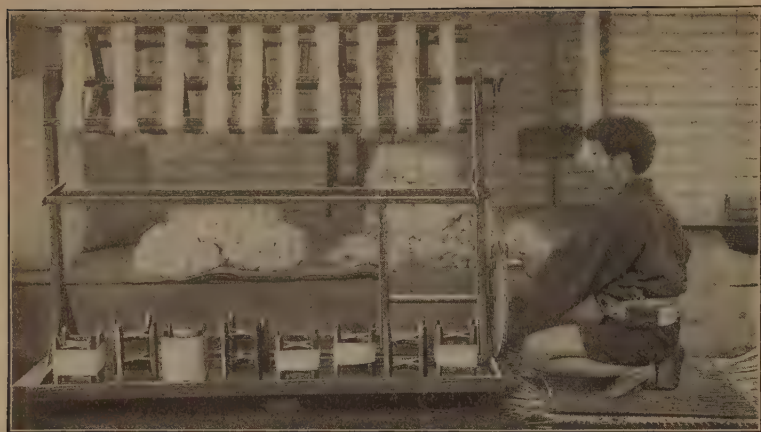
Supplemental Work. Read chapters 12-18, "Carpenter's Geographical Reader, Asia."

Korea. What waters nearly surround Korea? What is the chief city? its seaport?

The people of Korea resemble the Chinese in appearance, in religion, and in many of their customs. Until recently they refused to have intercourse with European nations. The government is now entirely in the hands of the Japanese. The chief industry is agriculture, but only a small portion of the land is cultivated. The principal products are rice, beans, wheat, barley, and ginseng. Gold, iron, copper, and coal are found, but not extensively mined. Trade with the interior is carried on by means of pack horses and porters.

Japan. Of what is the Empire of Japan composed? Compare the extent of the Japanese islands in latitude with that of the eastern coast of the United States. Compare their area with that of California (p. 153). What seas separate these islands from the mainland? Name the largest island; four other large islands.

The Japanese islands contain over fifty volcanoes, among them the famous Fujiyama. Earthquakes are very frequent. The surface is mountainous, and the rivers are generally mountain torrents.



REELING SILK, JAPAN.

In spite of the fact that much of the land is unfit for farming, agriculture is the chief occupation. The farming implements are very simple, but irrigating and fertilizing are well understood. Rice is the chief food crop. Mulberry trees are cultivated, and Japan, after China, is the world's greatest silk-producing country. Tea is grown, and the forests yield lumber, lacquer gum, and camphor—the last chiefly from Formosa. The bamboo is abundant, and is used for many purposes.

There are few sheep or cattle; hence little wool or leather is obtained, and dairy products are rare. But hogs and fowl are raised, and the Japanese fisheries are valuable.

The chief mineral products are silver, copper, coal, iron, and sulphur.

The Japanese produce wonderfully skillful and artistic handiwork. Japanese silk, embroidered goods, floor mats, metal work, lacquered ware, and pottery are now found in all European and American cities.

Many railroads have been built, and steam vessels are used for foreign trade, so that commerce is very active. The foreign commerce is large and increasing. The chief exports are silk, cotton yarn, coal, tea, and copper.

The Japanese are by far the most progressive of the Asiatic peoples. They are of mixed Mongol and Malay blood, small of stature, and very energetic. Until the middle of the nineteenth century they lived secluded from other nations. Then they invited American and European teachers into their country, sent their brightest youths to study in our cities, and established schools,



WEIGHING TEA LEAVES, JAPAN.

railroads, and telegraph systems. The emperor rules by the aid of a parliament consisting of two houses, the members of one being mostly nobles and the members of the other being elected by the people.

Education is almost universal, and newspapers are published in the larger cities. Most of the people are still Buddhists, dress in loose robes, with girdles and straw sandals, and follow the ancient customs of the country.

Tokyo, the capital, is a city of rapid growth, containing over two million people. The foreign quarter is much like a European city. *Yokohama*, its seaport, is the chief center of foreign commerce. *Osaka* and *Kyoto* are the seats of important manufactures.

Supplemental Work. Read chapters 2-10, "Carpenter's Geographical Reader, Asia."

The Philippine Islands (see inset map, p. 130). In what direction from Japan are the Philippine Islands? What waters surround them? Through how many degrees of latitude do they extend? Describe their climate. Name the chief island. What is the capital?

The Philippine Islands are a colonial possession of the United States, with an area greater than that of Colorado. There are about two thousand islands in the group, of which Luzon and Mindanao are much the largest. The bulk of the population lives in Luzon and the smaller islands just south of it. The people are mostly Malays, but there are many Chinese and a few Spaniards and Americans.



NATIVE BOAT, WITH OUTRIGGERS, PHILIPPINE ISLANDS.

The climate is warm, with a wet season between July and November. Much of the surface is covered with dense tropical forests of palms, bamboo, ebony, and teak. Most of the natives are civilized and are engaged in agriculture. A few tribes are in a savage state. The chief products are rice, sugar cane, manila hemp, coconuts, and tobacco.

Manila, in Luzon, is the capital and largest city. *Iloilo*, in Panay, and *Cebu*, on an island of the same name, are important ports.

The East Indies, or the Malay Archipelago. Name the largest islands of this group. Name the seas and straits between the islands. Describe the climate.

The surface of the East Indies is mountainous, and there are many active volcanoes. The fringe of lowland coast plain and the river flood plains are generally fertile. In the larger islands are dense forests.

The greater part of this group belongs to the Netherlands and is known as the Dutch East Indies. Most of the inhabitants are Malays, but there are many Chinese and a few Arabs. The Europeans, who are the ruling class, form only a small part of the population.

Java is by far the most important and most populous of the Dutch possessions. It is about as large as the state of New York, but contains over twice as many people. It exports much cane sugar, and, after Brazil, more coffee than any other country in the world. Cin-

chona and tea are produced. *Batavia* is the capital and commercial center of the Dutch East Indies.

Sumatra produces coffee, black pepper, rice, and India rubber, and has mines of gold, coal, tin, and lead. *Banka* and *Billiton* supply much of the world's output of tin.

Borneo is a little larger than Texas. Some parts of its wooded interior have not yet been explored. Most of the inhabitants are Malays. The northern part belongs to Great Britain, the rest to the Netherlands. The chief products are timber, sago, rice, coffee, pepper, gutta-percha, tapioca, and tobacco.

Supplemental Work. Collect pictures and objects illustrating the customs and occupations of Asiatic peoples. Read chapters 22-35, "Carpenter's Geographical Reader, Australia," etc.

CORRELATIONS AND COMPARISONS

Extent. How does Eurasia compare in size with the other grand divisions? How does Asia? How does Europe? How do the two parts of the grand division compare with each other? With which of the other grand divisions is communication from Eurasia easiest? With which is it most important? Why?

Coast. Compare Arabia and Spain in size; in latitude; in surface; in climate. Compare the Italian and Indian peninsulas; the Grecian and Malay peninsulas. Compare Kamchatka and the Scandinavian peninsula in latitude, direction, surface, climate. Compare the Japanese and the British islands in position, latitude, size, climate. Are the seas of Europe or of Asia more inclosed? Name and locate the closed or nearly closed seas and gulfs of Eurasia; the open seas, gulfs, and bays.

Surface. Compare the European and Asiatic highlands in length, extent, height. In which of these divisions is there easier communication between different river systems? Why? Compare the Spanish and Balkan plateaus with the plateaus of Iran and Tibet in extent, height, and drainage. Compare the Pyrenees with the Caucasus in length and direction. Compare the Alps with the Himalayas; the Apennines with the Western Ghats. Compare the rivers of the northern slope, in Asia and in Europe, in length and usefulness. Compare the rivers of the great basin of interior drainage in the two divisions. Compare the rivers of the eastern and southern slopes of Asia with the European rivers flowing to the Black and Mediterranean seas. Compare the northern and the southern streams of Asia in extent of basin and volume of water. Explain these differences. Compare the lakes of Eurasia and North America. Study the map and the text of Eurasia for some examples of the effects of water erosion; of deposition; of glacial action.

Climate. Compare the heat belts of Eurasia and North America, and give some reasons for their similarity of position. Explain the regions of heavy rains in western Europe and in western North America. Explain the regions of moderately heavy rain in eastern North America and in eastern and southeastern Asia. Compare the regions of little or no rain in the two grand divisions; show that their causes are the same, and why their positions are different.

Life. Compare the maps of temperature, rainfall, and vegetation. Show that in Eurasia the absence of either heat or moisture in any region affects its vegetation. Find examples of forest-covered mountain regions. Why are the forests still found there? Locate some regions without forests from natural causes; some made so by man. Find some river valleys of Eurasia which are forest regions; find some which are grassy land. In what plains have the people reduced the forest area? What kinds of wild animals might be found in traveling from north to south through central Asia?

Man. Compare the population maps with the physical map, the heat and rainfall maps, and the vegetation map. Are the highlands or the lowlands of Eurasia generally more densely peopled? Why? Are the densely peopled regions mainly in very cold, in very hot, or in temperate regions? What two temperate regions, as a whole, are most sparsely populated? Compare the regions of little or no rain with the regions of sparse population, and explain their relations. Compare the civilizations of Europe and Asia in age; in rapidity of progress; in present condition. What races are represented in Europe? in Asia? What is the chief race in each? Where is the most numerous Aryan population of Asia? the most numerous population of the yellow race in Europe?

Industries. What are the chief agricultural regions of Europe? of Asia? Compare the chief agricultural products of Europe and Asia. Where are there herding regions in Europe? in Asia? Name some domesticated animals employed in one of the divisions of Eurasia, but not in the other. Compare the methods of forest preservation and forest destruction in America and various parts of Europe. Compare the kinds of wood obtained from Europe and from Asia. Compare the mineral products of western Europe and of southeastern Asia. What are the great mining countries of Eurasia? What are the chief minerals obtained in each? Compare the manufacturing methods employed in Europe and in North America; in Europe and in Asia. Compare the character of the chief European and Asiatic manufactured products. Where are the chief commercial nations of Europe? of Asia? Compare the facilities for commerce in Europe and in Asia. What are some of the effects of this difference upon the lives of the people? Give several routes by which goods may be taken from eastern Asia to western Europe.

Countries. Compare France and Germany in size, agricultural products, minerals, manufactures, people, religion, and government. Compare the German Empire and Austria-Hungary in size, products, people, and prosperity. Give reasons for some of the differences you mention. What are the Scandinavian countries? Name the Mediterranean countries. Give their common and distinctive characteristics. Compare Belgium and Holland. In what respects does Switzerland resemble each country on her borders? Name two empires each of which covers neighboring territory in Europe and Asia. Compare them in size, products, people, religion, government, and power. Compare China and Japan. Compare Persia and Arabia. Compare the Asiatic possessions of the British and the French; the British and the Dutch.

Cities. Give an account of a merchant's voyage from London to Bombay and back again, describing both cities and telling what goods he carries on each trip. Describe similarly a voyage from Paris to St. Petersburg; from Bombay to Hongkong; from Singapore to Liverpool; from Lisbon to Copenhagen; from Hamburg to Constantinople; from Marseilles to Yokohama; from Stockholm to Naples. Make several other such voyages between places which you yourself select.



AFRICA

Extent and Coast. By what is Africa separated from the rest of the Eastern Continent? What oceans border it? In what zones does it lie? What American city has about the latitude of the northern point of Africa? of the southern point? How does Africa rank among the grand divisions in size? (p. 153.) Compare its extent with that of North America.

How does Africa compare with the other grand divisions in regularity of coast line? What gulf is on the west coast? What two *bights*, or open bays? What two gulfs and strait are on the north? What gulf and channel are on the east? What strait connects the Gulf of Aden with the Red Sea? Name the capes at the northern, eastern, southern, and western extremities of Africa. Name another cape near the southern extremity. What large island is east of Africa? Is it a continental or an oceanic island? (§ 20.) Name some oceanic islands west of Africa (small map).

Surface. Review the lesson on the highlands of the world (§§ 22-24). What part of Africa is mostly highland? What part is mostly lowland?

Highlands. From the Red Sea to the southern Atlantic coast the southeastern half of Africa is a continuous plateau. It is highest in the northeast, but in general the margins are more elevated than the interior, and are about a mile high. From this great plateau three narrow tongues of highland extend far to the northwest—one along the Red Sea coast, one through the center of the grand division, and one along the Atlantic coast.

There are detached mountain ranges on the plateau, but none of any great length or elevation. In the eastern part of the plateau region are evidences of volcanic activity, and the frequent earthquakes indicate that the region may still be undergoing upheaval. Mount Kilimanjaro and Mount Kenia in this region are cones of extinct volcanoes nearly four miles high. They are among the few peaks of Africa that are lofty enough to be covered with perpetual snow.

The Atlas Mountains occupy a narrow highland in extreme northwestern Africa.

Lowlands. The greater part of northern Africa is a continuous lowland. In the south, while the interior is mostly highland, there is a narrow strip of lowland along either coast.

Climate. What part of Africa is always hot? (map, p. 21.) What parts have temperate winters and hot summers? What belt of calms crosses northern Africa? southern Africa? (§ 85.) How does this affect the rainfall of these regions? (§ 93.) What belt of calms sweeps

northward and southward over central Africa? (§ 90.) How does this affect the rainfall of that region? At what season is the rain belt farthest south in Africa? farthest north? At what times of the year do the rainy and dry seasons occur in the different parts of central Africa?

Drainage. Which slope of Africa (Atlantic or Indian Ocean) contains the greatest rivers? Name five large river systems. Which of these rivers flow from the region of abundant rainfall? (map, p. 22.) In what lakes does the Nile rise? Name its chief branches.

What two great rivers flow into the Gulf of Guinea? What is the chief eastern branch of the Niger? What lakes are near the sources of the Kongo? How does the Kongo compare with the other rivers of Africa in number of tributaries? How does its basin compare with that of the Nile in size and rainfall?

What river of South Africa flows to the Atlantic Ocean? How does the climate of its valley resemble that of the Nile valley? What large river flows to the Indian Ocean? What large lake is tributary to the Zambezi?

What lake is between the central and western highland tongues? What river system is tributary to this lake? What small lake in southern Africa has no outlet?

Trace the continental divide of Africa, and describe the two chief slopes and each of the drainage basins.

The Kongo and the Niger carry about half the drainage waters of Africa. The Kongo ranks next to the Amazon in volume, among the world's great rivers. The Nile is one of the longest rivers in the world, but much of its basin is so dry that it ranks only fourth among African rivers in volume. The water which falls during the rainy season in equatorial Africa causes the lower Nile to overflow its banks, thus irrigating and fertilizing its flood plain through the arid region.

The rivers, where they descend from the plateau, are obstructed by cataracts which interrupt their navigation. The lowest cataracts of the Nile and of the Niger are more than 700 miles from the sea. But in the Kongo, cascades occur where it cuts through the western highland tongue,

much nearer its mouth. The Zambezi and the Orange rivers have many falls and are not extensively navigated. The Victoria Falls of the Zambezi rival those of Niagara in grandeur.

Lake Tchad has no outlet to the sea, and is gradually decreasing in size, though in times of prolonged rains it becomes larger temporarily. A western tributary of the Shari flows through a swampy region which drains both to the Shari and Lake Tchad and also to the sea through the Binue and the



AVENUE OF PALMS—NILE RIVER.



SOME ANIMALS OF AFRICA.

Niger. Near the southern edge of the Atlas highland are several deep depressions in the lowlands, called *shotts*; they contain salt lakes during part of the year.

Life. What animals and plants are peculiar to the African life region? (§107.) Where are the forests? (map, p. 24.) Where are the grass lands? Where are the deserts? What is the great northern desert region called? the southern desert region? (map, p. 140.)

More than a third of Africa consists of deserts. Some parts of these are covered with shifting sands and wind-formed dunes (§ 37), with here and there fertile oases. Other parts are stony and barren, and still others rough and mountainous. Date palms grow in the oases, and such other plants as thrust their roots deep down to the ground water. Along the edges of the deserts are plains where grow acacias and rough grasses like those of our own plateau region.

In the equatorial forests are sago and oil palms, mimosa and rubber trees, and other plants peculiar to this life region. In the coast marshes are mangrove jungles and enormous grasses resembling cane and bamboo.

More large wild animals are found in Africa than in any other of the grand divisions. Snakes and insects abound.

People. To what race do most of the people in central and southern Africa belong? (§ 119.) To what race do the people in northern Africa belong? (§ 115.) What parts of Africa have a dense or moderately dense population? (map, p. 28.) How does the distribution of people correspond with the distribution of rainfall? (map, p. 22.)

Few of the negro tribes in Africa have advanced to the stage of civilization, and many of them are still in the savage state. For many centuries negroes were carried from Africa into various countries as slaves. The barbarous tribes in central Africa still make slaves of the prisoners whom they capture in war, but the trade in slaves has been very largely suppressed.

The white peoples who occupy the countries bordering on the Mediterranean are chiefly Arabs, Berbers, and Jews. Many are quite dark-skinned. In most parts of Africa, especially near the coasts, Europeans have established settlements and colonies. In the south they have built towns and roads, and have introduced the arts of civilization.

Supplemental Work. Draw on a large scale a map of Africa, naming the chief natural features. Model Africa.

Read chapters 12, 20, 24, 27, 29, 34, 35, "Carpenter's Geographical Reader, Africa." Write a comparison between northern and southern Africa in climate, products, and inhabitants. Begin a scrapbook of pictures and interesting items about Africa.



ROAD TO THE PYRAMIDS.

COUNTRIES OF NORTHERN AFRICA

Egypt. What water boundaries has Egypt? What country is northwest? What river passes through Egypt? What ship canal is included within its limits? What desert occupies its western part?

The river Nile flows northward through Egypt, and most of the people live in its delta and its narrow, but fertile, flood plain. This plain is bordered by steep, rocky bluffs, beyond which stretches the desert. A great dam at Assuan and an artificial bar at Siut furnish a supply of water to irrigate the lower valley during the dry season.

Agriculture is the chief occupation, but the methods are very primitive; the soil is not even plowed, but the seeds are scattered, and then trampled in by oxen. The water supply is lifted from the river by wheels or pumps, and distributed by dikes and ditches. Wheat, corn, cotton, sugar cane, rice, and semitropical fruits are grown. Donkeys, oxen, camels, and sheep are raised.

There are but few manufactures except handmade embroideries, jewelry, and leather work. The Nile River and a railroad along its valley are the principal means of transportation. Cotton, cotton seed, and sugar are exported in exchange for cloth, timber, coal, and hardware.

By far the most important commercial route, however, is the ship canal, from Port Said to Suez, across the Isthmus of Suez, through which passes a large part of the commerce between Europe and Asia.

Most of the people are of mixed Arab and negro blood; but there are many Turks and a few Europeans. Mohammedanism is the prevailing religion.

The ruler, or *khedive*, of Egypt pays tribute to the Sultan of Turkey, but the government is controlled by

Great Britain. South of Egypt is the large region called Anglo-Egyptian Sudan, under the joint control of Great Britain and Egypt.

Cairo, the capital, is the largest city of Africa. Near it are the great pyramids, built thousands of years ago when this region was the center of the learning and the civilization of the world. *Alexandria* is the chief seaport of Egypt.

The Barbary States. What four states occupy the Mediterranean coast west of Egypt? By what region are they bounded on the south? Which are traversed by the Atlas Mountains?

The eastern part of this region is too dry for agriculture except in occasional oases. In the western part, where the rainfall is greater, grain is grown on the plateaus, and tropical fruits on the lower lands. In much of this region, as in Egypt, the methods of agriculture are rude, and the crops are small. Mules, horses, camels, sheep, and goats are raised, and along the coast sponge fishing and coral fishing are important industries.

There is some hand manufacture of woolen and silk goods, shawls, carpets, felt, and leather.

Grain, vegetables, and fruits are the chief exports. Esparto grass used for making paper is also exported. Most of the desert carrying trade centers in the Barbary States.

The native peoples are chiefly Mohammedans. They include Berbers, who are mostly farmers; Arabs, who tend flocks and herds; and Moors, who live in the towns. The leading merchants and traders are Jews. There are also many negro slaves in Morocco and Tripoli. In Algeria and Tunis there are a considerable number of Europeans.

Tripoli is part of the Turkish Empire. The city of *Tripoli* is the capital. Its trade is largely in ostrich plumes, ivory, and slaves brought across the desert.

Morocco is ruled by an absolute monarch called the *sultan*. *Tangier* is the chief port. *Morocco* and *Fez* are larger towns in the interior; the sultan resides part of the time in one and part of the time in the other. **Algeria** is a part of the French Republic. *Algiers* is the chief commercial city and seaport. At *Oran* are valuable marble quarries. *Biskra*, in a beautiful oasis on the edge of the desert, is the terminus of important caravan routes. The government of **Tunis** is nominally still in the hands of a native ruler called the *bey*, but a French *resident* really has most of the governing power. *Tunis*, the capital, is the largest city of the Barbary States.

The Sahara. Compare the Sahara with the United States in size.

The word *sahara* means "desert," and the region to which it is applied is the largest desert in the world. In this region there are many oases; some of them are very



INTERIOR OF HOUSE, ALGERIA.



CAMELS ON THE DESERT.

large and in them date palms, olive trees, and grain are grown. The region is very sparsely peopled by wandering tribes. The chief product is salt, most of which is bartered to the natives of central Africa. The greater part of the Sahara is claimed by France.

Supplemental Work. Read chapters 2-11, 13-17, "Carpenter's Geographical Reader, Africa."

CENTRAL AFRICA

Central Africa includes the region from the Sahara to the Zambezi River. Describe the surface and drainage of this region; the distribution of heat and moisture. Where are the forests? (map, p. 24.) Where are the prairies?

South of the Sahara is the fertile, grassy Sudan, beyond which is the region of equatorial forests.

The forests contain valuable woods, rubber-yielding vines, trees yielding gums from which varnish is made, the palm, from whose fruit is obtained palm oil used in making soap, and other useful plants. In these forests are herds of elephants, and in the rivers are hippopotamuses. The tusks and teeth of these animals are exported as ivory. In parts of the region the tsetse fly carries a disease often fatal to cattle; but throughout the upper meadow lands cattle and sheep may be raised, and bananas, corn, rice, cotton, tobacco, cacao, sugar, and, at higher elevations, wheat may be grown.

This region is the true home of the negro, and in it live most of the negroes of the world. The natives of the interior are generally more intelligent than those near the coast. They weave a cloth of palm fiber, make rude canoes, spears, and bows and arrows, although many use firearms and weapons obtained from white

men. Some cultivate the soil; others are fishermen. In this region also live the pygmies, a dwarf people of the black race.

It is only recently that central Africa has been explored, but now six European nations claim nearly the whole of the region,—Great Britain, France, Germany, Portugal, Belgium, and Italy (small map, p. 140). These claims have generally grown from a few trading settlements made along the coasts by white men. After the traders had secured a foothold, the home government sent out soldiers to protect the colony, and to extend its "sphere of influence" into the interior.



IVORY CARRIERS, BELGIAN KONGO.

The exports from most of these possessions are similar, and consist chiefly of palm oil, rubber, ivory, varnish gums, hides, cabinet woods, and some cotton and coffee.

The most important districts on the west coast are **Sierra Leone** (British) and **Liberia** (a negro republic),—both founded as a refuge for negroes rescued from slavery,—**British Nigeria**, **German Kamerun**, **French Kongo**, and **Portuguese Angola**.

Much of the interior is occupied by the **Belgian Kongo** first established as the Kongo State by the European powers for purposes of trade. Later it was annexed by Belgium and is governed as a colony of that country. Trade is open to all nations on the same conditions. The chief exports are rubber and ivory.

Eritrea, on the Red Sea, and the east coast of **Somali-land** are claimed by Italy, and the rest of the east coast is claimed by Great Britain, Germany, and Portugal. **Abyssinia** is a native kingdom. The Abyssinians raise horses, cattle, and camels, and produce woven



NATIVE STORE, WEST COAST.

fabrics and leather goods. Coffee, skins, and ivory are the chief exports.

The island of **Zanzibar**, an important post, is ruled by a native sultan under British control. Cloves and central African products are exported.

The island of **Madagascar** belongs to France. The natives in the west are black savages; those in the east are partly civilized Malays. The French are now building roads and opening up the mineral and agricultural resources of the country.

Mauritius, a British colony, and **Reunion**, a French possession, produce large quantities of sugar, also aloe fiber, cocoanut oil, vanilla, and rum.

Supplemental Work. Read chapters 18, 19, 21, 25, 26, 28, 30-33, 36-39, "Carpenter's Geographical Reader, Africa."

SOUTH AFRICA

South Africa includes the region south of the Zambezi River. The surface rises rapidly by a series of terraces from a narrow coast plain to a gently undulating, treeless plateau, called the *veldt*. On the eastern and southern slopes there is sufficient rainfall to support forests of palm, ebony, and rubber trees. Olives, cypresses, and evergreens flourish in the south. The eastern part of the plateau is excellent pasture land, but the western portion is a desert.

The lowland slopes are well adapted for the cultivation of sugar cane, coffee, cotton, and wheat, but the uplands are better adapted for herding, and vast numbers of sheep, cattle, ostriches, and goats are raised. In a small region between the Orange and Vaal rivers, near their junction, are the chief diamond mines of the world; and north of the Vaal are extensive gold mines.

The largest and most valuable part of South Africa belongs to Great Britain. The German territory on the west coast is too dry for agriculture, but the Portuguese colonies on the east produce some coffee and rubber, besides various ores.

Cape of Good Hope, usually called **Cape Colony**, is in the extreme south, and north of it are the **Orange Free State** and the **Transvaal**, which were recently annexed by Great Britain. These, with **Natal**, are the most progressive



KAFIR NATIVE HUTS, SOUTH AFRICA.

countries of Africa. Many miles of railroad have been built, and the towns have well-paved streets, electric lights, and street cars. These four provinces are united under a federated government known as the **Union of South Africa**. The governor-general of the Union is appointed by the British sovereign, and each province also has its own local government. The large region called **Rhodesia**, and the **Nyassaland Protectorate**, are both being rapidly settled by the British.

The negro natives of this part of South Africa have either been pushed back into the interior or have partly adopted the ways of the white men and work for them as servants and laborers.



DIAMOND WASHERS, KIMBERLEY.

The Dutch made the first coast settlements at the southern extremity of Africa, but the British took possession of them. Many of the Dutch farmers, or Boers, not liking British rule, moved northward and founded the two states which later were also annexed by Great Britain.

Cape Town is the capital and chief port of Cape of Good Hope, and is also the legislative capital of the Union. The exports are gold, diamonds, wool, feathers, goats' hair, hides, and copper ore. **Port Elizabeth** also has an active commerce. **Kimberley** is the center of the diamond-mining region.

Pretoria, the capital of the Transvaal, is also the executive capital of the Union. **Johannesburg** is the center of the gold-mining region. **Bloemfontein** is the capital of Orange Free State. These places are connected with the coast by railroad. The exports of these provinces are similar to those of Cape of Good Hope.

Durban is the seaport and largest town of Natal.

Supplemental Work. Read chapters 40-50, "Carpenter's Geographical Reader, Africa."

TOPICS ON AFRICA

I. PHYSICAL FEATURES. Extent: latitude; longitude. Surface: distribution of highlands and lowlands. Drainage: continental divide; rivers—sources, mouths, size, obstructions, usefulness; lakes. Climate: heat belts; winds; distribution and causes of rainfall.

II. LIFE. Vegetable: distribution; reasons; peculiar plants. Animals. Man: distribution of races; distribution and causes of density.

III. PRODUCTS. Vegetable; animal; mineral.

IV. COUNTRIES. European colonies. Native states: dependent; independent.



POLITICAL AND PHYSICAL
MAP OF
AUSTRALIA
AND THE
ISLANDS OF THE PACIFIC

Scale, 600 miles to one inch, same as the maps of North America, South America, Eurasia, and Africa

SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000

The highlands above 2000 feet are shown in the buff tint, the lowlands in the green tint, and the submerged part of the continental plateau in the light blue tint.

HAWAIIAN ISLANDS
(To the United States)
Scale, 133 miles to one inch, same as Northern Section of the United States

NIHAU
KAHOOLAWE
LANAI
MAUI
HAWAII
Mauna Kea
Vol. Mauna
Hilo

BRADLEY & PATES, ENGINEERS, N.Y.

AUSTRALIA AND THE PACIFIC ISLANDS



EUCALYPTUS TREES, AUSTRALIA.

AUSTRALIA

Extent and Coast Line. What tropic crosses Australia? Is any other continent wholly in the southern hemisphere? How does Australia rank among the grand divisions in size? Compare its area with that of the United States (p. 153). Name three indentations of the coast. Name the largest island to the north; to the south. What obstacle to navigation extends along the northeast coast?

Surface. Compare Australia with the other grand divisions in the proportion of lowland and of highland. In what part of Australia is the greatest extent of highland? Locate the other highlands of Australia.

In general, the surface of Australia is flat. Most of the eastern half is a low plain, which rises eastward to a narrow rim of highland. The eastern slope of this highland is steep and rugged. Its loftiest points are about one and one half miles high, but in general it has less than half that elevation. The western half of Australia is a low plateau, which in places rises slightly above the limit of lowland.

Climate. What heat belt embraces most of Australia? (map, p. 21.) What part is always hot? What part is always temperate? In what season does Christmas occur in Australia? Why? In what wind belts does Australia lie? (map, p. 22.) What parts receive a moderately heavy rainfall? What part receives light rains or little or no rain? What calms lie over central Australia part of the year?

Most of Australia is deficient in rainfall. The equatorial rain belt brings copious rains in spring and summer to the north coast, but the tropical calms make these seasons dry (§ 93) on the south coast. In winter the tropical calms lie farther north and the prevailing westerly winds bring rain to the southwest, while the north coast is dry. The southeast trades yield ample moisture at all seasons on the steep eastern slope; but much of the interior receives little rain and is a desert.

Drainage. What is the largest river system in Australia? Where are there other streams? Show the relation between the location of the streams and the distribution of the rainfall. Where are there lakes?

The Murray River and its tributary the Darling are each over 1000 miles long, but their supply of water comes mainly from the eastern highlands, and they decrease in volume as they advance. For about half the year they are navigable for small steamers. There are many short but beautiful streams along the east and north coasts. In the interior the stream beds are dry except after the infrequent showers. Most of them end in salt lakes or marshes.

Vegetable and Animal Life. What parts of Australia are forest-covered? (map, p. 24.) What parts are grassy lands? What parts are deserts? Review the lesson on the Australian life region (§ 105). Describe some of the characteristic forms of vegetable and animal life, and tell wherein the Australian life region differs from all others.

The hot, well-watered, north coast has forests as luxuriant as those of the Amazon and Kongo basins. From these, cabinet woods are obtained, and farther south on the coast are pines, cedars, and eucalyptus or gum trees. Most of the interior, however, is covered with a "scrub" of reedlike grasses and, in the drier regions, with an almost impenetrable "bush" of thorny acacias.

Many of the smaller animals live in the forest regions, but the great kangaroos, the ostrichlike cassowaries, and the emus live on the open plains.

People. Australia is the most thinly settled of the continents. Three fourths of all the people live in the extreme southeastern portion; much of the western portion is but partly explored, and is practically uninhabited.

When white men first settled in Australia, a little more than a hundred years ago, the only inhabitants were tribes of black-skinned savages. Of these but few remain. Most of the present inhabitants are emigrants



AUSTRALIAN NATIVES.

from the British Isles or their descendants, but a few are from other parts of Europe or from Asia.

The British emigrants brought the first sheep and cattle to Australia and started the industry of stock raising. Australia has now become the greatest of wool-producing, and one of the greatest meat-exporting, countries in the world. Most of the land used by man in Australia is devoted to sheep farms and cattle ranges. Agriculture is carried on in the moist coast region in the east and south, and some wheat is exported, but the combined value of all crops raised is only half that of the wool and meat.



GOLD MINE, AUSTRALIA.

Gold, silver, coal, copper, and tin are mined principally on the inner slope of the eastern highland. Nearly one fourth of the world's supply of gold comes from Australia, yet the yearly product from all the mines is but one fifth as valuable as the pastoral and farm products.

More than half the people live in cities, and manufacturing is an important industry; however, much cloth, machinery, and general manufactures are imported. Most of the foreign trade is with Great Britain and her other possessions. There is an extensive system of railroads in the southeast, and the continent is connected with Eurasia, Africa, and America by telegraph cables.

Government and Divisions. Australia belongs to Great Britain; its five states, with Tasmania, form the *Commonwealth of Australia*. The Territory of Papua (British New Guinea) is a dependency of the commonwealth. The governor-general is appointed by the king, and there is a parliament to which the people elect members. Name the states of Australia. *Melbourne* is the temporary capital of the commonwealth.

Victoria is a great agricultural and gold-mining state, and has also large pastoral and manufacturing interests. The chief exports are wool, gold, animal products, and wheat. *Melbourne*, the capital, is the largest city in Australia and the chief port of the state. *Ballarat* is in the gold fields.



GEYSER TERRACE, NEW ZEALAND.

New South Wales, the oldest and wealthiest state, supplies one half of the wool product of Australia, besides much wheat, corn, sugar cane, and wine, and many oranges. Gold, silver, and coal are extensively mined. *Sydney*, its capital, is but little smaller than Melbourne, and has a much larger foreign commerce.

Nearly half the surface of **Queensland** is forest-covered. Grain and sugar cane are the chief crops. In the interior many sheep and cattle are pastured. Much gold and some coal are mined. The population includes some Chinese and East Indians. The chief exports are gold, preserved and frozen meats, wool, sugar, and hides. *Brisbane* is the capital.

South Australia has rich copper mines, and raises important crops of wheat and grapes. The chief exports are wool, wheat, flour, and copper. *Adelaide*, the capital, is the only large city.

The coast regions of **Western Australia** are less fertile than the surrounding country nearer the sources of the rivers. Gold is the most valuable export, but much timber and wool are also exported. *Perth* is the chief city and the capital.

Supplemental Work. Draw and model Australia. Read chapters 1-9, "Carpenter's Geographical Reader, Australia," etc.

ISLAND GROUPS

Tasmania is surrounded by many small islands, and its coast has many bays. It is called the "Switzerland of the South," because of its mountainous surface. Its climate is more equable than that of Australia.

The plant and animal forms are Australian. The mountains are thickly forested, and the flood plains are fertile.

The island is part of the Commonwealth of Australia. It is studded with sheep farms. Fresh and preserved fruits are shipped to Australia and England. Copper, tin, silver, and gold are mined for export, and coal for domestic use.

Hobart, the capital, is beautifully situated, and is a summer resort for people from Australia.

New Zealand. Name the islands of this group. What strait separates the two largest?

Both of the large islands are mountainous, with snow-clad peaks two miles high. North Island contains active volcanoes and geysers. South Island is noted for its glaciers, glacial lakes, and glacier-carved fiords, resembling those of Norway. The climate is mild and moist.

The vegetation is peculiar, but resembles most nearly that of Australia. The mountains are forest-covered, and the plains are clothed with grass. A large tree called the kauri pine furnishes fine timber for export. There are few native animals, but New Zealand is the home of the kiwi (p. 25), a singular bird without wings. The few natives, called Maoris, are of Malay origin.

New Zealand was settled by Englishmen, and is a part of the British Empire. Sheep and cattle raising, farming, and the mining of gold, coal, and fossil kauri gum are the principal occupations. The chief exports are wool, frozen and preserved meats, gold, and dairy products, which are sent chiefly to England. *Wellington*, the capital; *Auckland*, on North Island; and *Dunedin*, on South Island, are the chief cities.

Australian East Indies. What is the largest island north of Australia? Name the principal islands west of New Guinea included in the Australian life region (map, p. 25). Name the seas between them. To whom do most of these islands belong? To whom does part of Timor belong? Among what three nations is New Guinea divided? Name two groups east of New Guinea. To what nation do most of these islands belong?



NATIVE SAMOAN GIRL AND BOAT.

The larger islands of the Australian East Indies contain volcanoes and are fringed with coral reefs, but there are many small coral islands and atolls. The climate is hot and moist. The products are tropical fruits and vegetables, spices, sugar, cotton, pearls, and copra, or the dried meat of cocoanuts. Copra is extensively exported to be used in making cocoanut oil.

Other Pacific Islands. Where are the Fiji Islands? What groups are between them and Australia? What groups east of them? To whom do the Fiji Islands belong?

Scattered through the western Pacific are many clusters of small volcanic and coral islands. The vegetation consists of cocoanut palms, bananas, breadfruit trees, a palm called the "screw pine," yams, and sugar cane. The natives are chiefly of the Malay race, somewhat civilized by contact with European and American settlers.

The Fiji Islands are volcanic. They contain sugar plantations, and export sugar, fruits, and copra to Australia and New Zealand.

The Samoa Islands are mountainous, and are occasionally visited by earthquakes. They are well watered, well forested, and fertile, and export copra. The natives are partly civilized. *Savaii* and *Upolu* belong to Germany. *Tutuila* and several smaller islands are owned by the United States.

The Hawaiian Islands lie in the north tropical Pacific about one third the distance from San Francisco to Sydney. Hawaii, the largest island, is about the size of Connecticut, and contains active volcanoes. All the islands are volcanic and mountainous. The climate is warm and equable, with ample rainfall on the northeast or windward slopes.

These slopes bear a dense tropical vegetation, with forests of cocoanut palms, candle nut, screw pine, and other trees, as well as such plants as the breadfruit, banana, and taro.

Sugar cane is extensively cultivated, and is the chief crop. Rice and coffee are also raised.

About one fourth of the people are natives called Hawaiians; the remainder are chiefly Japanese, Chinese, and Portuguese laborers, but there are also some Americans. Since 1900 the group has been a territory of the United States.

Honolulu is the capital and largest city. *Hilo* is the largest city on the island of Hawaii.

Supplemental Work. Read Chapters 10-13, 16-21, "Carpenter's Geographical Reader, Australia," etc.



FISHING BOAT, HAWAIIAN ISLANDS.





COLONIAL POSSESSIONS.

- | | | |
|---------------|-------------|---------------|
| Great Britain | Portugal | Italy |
| France | Spain | Denmark |
| Germany | Netherlands | United States |

Only the navigable portions of rivers are shown.
— Steamship Routes. Figures indicate distances in geographical or nautical miles between places marked thus:
— Railroads and telegraph lines. — Caravan Routes.
..... Submarine cables and telegraph lines. — Canals.

CORRELATIONS AND COMPARISONS

Physical Features. What is the earth's size? shape? What are the movements of the earth? What are the effects of these movements on the distribution of light? of heat? On the circulation of the air? of the ocean? On the tides? Compare the northern and southern hemispheres in their proportions of land and water.

Make a list of the world's great lowlands, and tell of each its climate, products, the nations which inhabit it. Make a list of the world's great plateaus, and tell of each its general elevation, climate, and products, and the nations which occupy it. Make a list of the world's great mountain systems and compare them in height; continuity; the number and height of their mountain peaks.

Give instances from various countries of movements of the earth's crust; of water erosion; of deposition; of the work of winds on surface forms. Mention some places where cataracts occur. Where are there continental glaciers? valley glaciers? evidences of former glaciers?

Name the chief rivers draining the Atlantic-Arctic slope in Eurasia; North America; Africa; South America. Name the chief rivers draining the Pacific and Indian Ocean slope in Africa; Eurasia; Australia; America. Make a list of the world's great lake regions. Tell of each the names, outlets, and uses of the chief lakes.

Name the world's great seas and bays; important isthmuses; straits; peninsulas; islands. Tell of each island or island group what you know of its origin, climate, and surface.

Climate. Describe and account for the trade winds; equatorial calms; tropical calms; prevailing westerly winds; monsoons. Why do the belts of winds and calms move northward and southward during the year? What is the effect of this movement? Describe cyclones.

Make a list of the regions of heavy rainfall, and try to account for the existence of each. Locate the largest regions of moderately heavy rain. Compare the positions of the areas of interior drainage in the northern and southern hemispheres; in the two northern grand divisions; in the three southern grand divisions. Compare the positions of the rainless regions of the world; of the desert regions. Compare the maps on pp. 22 and 24; what are the chief farming regions of the world? What great regions suited by climate for farming are still forest-covered? Where are there great herding regions?

Life. Compare the northern and southern hemispheres in the peculiarity of their life forms. Name the great life regions. In which are the life forms most peculiar? Which two regions are most nearly alike in life forms? Which region is nearly identical with a continent? What regions cover parts of two grand divisions; only part of a grand division? Locate and account for three transitional regions. Which grand division contains life forms belonging to three different regions? Describe the life forms, both animal and vegetable, of South America; North America; Eurasia; Africa; Australia.

Man. What is meant by savagery? barbarism? civilization? Compare the civilization of Europe with that of Asia. Describe its spread over North America, South America, Africa, and Australia; and describe its condition in each of these grand divisions. What parts of the world are not yet explored? not yet civilized?

Is population denser in the eastern or in the western hemisphere? in the northern or in the southern? Explain the locations of the most densely peopled regions of North America; of Eurasia. In what re-

gions is sparseness of population due to cold? to little moisture and vegetation? to much moisture and vegetation?

Make a list of the races of man. Tell of each where it is found; its advancement; the chief nations representing it.

Agriculture and Herding. What are the world's great wheat-producing regions? In what respects are they similar? What regions produce rice? corn? tea? cotton? flax? Name some fruits which enter into the world's trade, and tell where each is grown. Where are cattle, hogs, and sheep raised? Name some regions which export food. Why? Name some which import food. Why? What do they exchange for the imported food?

Fishing. Make a list of some of the best ocean fishing grounds. What kind of fish are caught in each? Name waters famous for oysters; salmon; sponges; pearls; coral.

Lumbering. Locate some of the world's great lumbering regions. Make a list of useful forest products; tell where each is obtained, and how it is used.

Mining. How was coal formed? How is it mined? Locate the world's great coal-mining regions; regions which export coal; regions which import it. Where are the world's great petroleum regions? What mineral ranks next to coal in importance? How is it mined? Where is it produced? manufactured? Why is it important to find coal and iron near each other? When both are not found in the same region, which is usually transported to the other? Name some cities which manufacture iron and steel. Make a list of other mineral products, and tell about their occurrence, mining, and uses.

Manufacture. In what two ways may manufacturing be done? Where do primitive methods prevail? Where do modern methods prevail? Compare these regions with those of dense population; of iron and coal production.

Commerce. Define foreign commerce; domestic commerce. Where are railroads numerous? few? Give instances of the influence of surface forms upon railroad routes; of great natural obstacles overcome in building railroads. For what purposes are canals better than railways? Locate some canals and show why they are useful. Tell what you can of the methods of using canals. Illustrate the comfort and convenience gained by commerce; the discomfort and distress occasioned by its absence.

Countries. Make a list of the divisions and colonial possessions of the British Empire. Tell of each its resources and products; what it contributes to and receives from the rest of the world. Name and describe the world's other great empires. Tell of each country's contributions to the world's trade. Make a list of the colonial possessions of France; Germany; the Netherlands; Portugal.

Cities. From the tables on pp. 154-155, make a list of the twenty most populous cities of the world. Give the location and some characteristics of each. What route might you follow, and what goods might you carry each way in making trips between Halifax and Liverpool? London and Madras? Odessa and Havre? Hamburg and Vera Cruz? Sydney and San Francisco? Venice and Batum? Duluth and Dublin? Cape Town and Amsterdam? Havana and Glasgow?

AREA AND POPULATION OF THE EARTH.

SUMMARY.

Length of earth's axis (miles)	7,900
Length of equator	24,900
Earth's Surface (sq. mi.)	196,900,000
Pacific Ocean (sq. miles)	71,000,000
Atlantic Ocean	34,000,000
Indian Ocean	28,000,000
Antarctic Ocean	7,500,000
Arctic Ocean	4,000,000
The Sea	144,500,000

	Sq. Miles.	POPULATION.
North America	9,431,000	126,126,000
South America	8,856,000	38,629,000
Europe	3,842,000	420,244,000
Asia	17,066,000	909,223,000
Africa	11,512,000	143,597,000
Australia, etc.	3,456,000	6,617,000
S. Polar Lands	254,000	.....
The Land	52,407,000	1,644,435,000

North America.

Greenland	837,837	12,000
Iceland	39,768	79,000
Nova Scotia	21,429	492,000
N. Brunswick	27,992	352,000
Prince Edw. I.	2,162	94,000
Quebec	344,633	2,003,000
Ontario	222,857	2,523,000
Manitoba	73,745	456,000
Brit. Columbia	372,625	390,000
Alberta	253,540	374,000
Saskatchewan	250,650	492,000
Yukon, etc.	2,159,553	25,000
Part Gt. Lakes	30,540	.....
Dom. of Canada	3,759,726	7,201,000
Newfoundland	42,730	217,000
East Labrador	6,950	4,000
Brit. America	3,809,406	5,593,000
St. Pierre, etc.	93	7,000
U.S. and Alaska	3,679,403	92,037,000
Mexico	767,258	15,063,000
Guatemala	43,641	1,842,000
Honduras	44,274	544,000
Salvador	8,170	1,007,000
Nicaragua	49,552	429,000
Costa Rica	18,989	335,000
Panama	53,302	(?) 228,000
Pan. Canal Zone	474	127,000
British Honduras	7,560	37,000
Central America	205,662	4,549,000
Cuba Group	44,015	2,048,000
Haiti, Rep. of	11,072	1,294,000
Santo Domingo	18,756	416,000
Jamaica	4,841	777,000
Porto Rico	3,435	1,118,000
Bahama Is.	4,404	54,000
Other Islands	4,937	1,232,000
West Indies	91,460	6,939,000
Bermuda Is.	19	18,000

South America.

Colombia	405,714	3,917,000
Venezuela	363,822	2,445,000
Guiana, British	95,174	296,000
" Dutch	49,846	87,000
" French	30,465	33,000
Brazil	3,300,816	14,334,000
Paraguay	97,726	636,000
Uruguay	68,906	1,043,000
Argentina	1,083,551	4,957,000
Chile	293,050	3,255,000
Bolivia	442,636	1,766,000
Peru	438,906	4,586,000
Ecuador	118,627	1,272,000
Falkland Is., etc.	6,573	2,000

Europe.

England	50,839	34,428,000
Wales	7,468	1,647,000
Scotland	30,405	4,760,000
Ireland	32,352	4,382,000
Man and Chan. Is.	303	149,000
Gr. Brit. & Ir.	121,367	45,366,000
German Empire	210,232	64,904,000
Luxemburg	999	247,000

Europe (continued).

	Sq. Miles.	POPULATION.
Netherlands	12,562	5,853,000
Switzerland	15,964	3,737,000
Austria	115,924	28,568,000
Hungary	125,607	20,841,000
Bosnia, etc.	19,702	1,895,000
Liechtenstein	61	10,000
Aus-Hungary	261,294	51,314,000
Norway	124,122	2,393,000
Sweden	172,920	5,522,000
Denmark	14,848	2,757,000
Faroe Islands	512	18,000
Belgium	11,369	7,517,000
France	207,217	39,602,000
Monaco	1	15,000
Andorra	175	6,000
Spain	191,986	19,083,000
Gibraltar	2	27,000
Portugal	34,507	5,016,000
Azores	922	257,000
Madeira Is.	315	151,000
Italy Proper	91,455	30,151,000
Sicily	9,937	3,683,000
Sardinia	9,295	853,000
Italy	110,687	34,687,000
San Marino	24	11,000
Malta	125	188,000
Greece	24,973	2,632,000
Turkey in Eur.	64,599	5,885,000
Bulgaria	37,320	4,329,000
Crete	3,328	310,000
Thasos (Egypt)	152	12,000
Montenegro	3,506	228,000
Servia	18,650	2,494,000
Roumania	50,717	5,957,000
Russia (includ. Pol. & Finland)	1,976,586	105,993,000
Caucasia (north of mountains)	86,660	3,733,000
Sea of Azof	14,519	.....
Nova Zembla	35,449	.....
Russia in Eur.	2,113,214	109,726,000
Spitzbergen	.....	.....
Franz Josef L'd	.....	.....
Jan Mayen, etc.	33,506	.....

Africa.

Morocco	176,062	7,000,000
Algeria	343,629	5,564,000
Tunis	64,623	1,800,000
Tripoli	405,791	1,000,000
Egypt	247,876	11,287,000
Sahara, remain- ing part	2,461,156	791,000
Anglo-Egyptian Sudan	785,714	4,000,000
Abyssinia	311,880	8,330,000
Eritrea	42,471	331,000
Fr. Somali Coast	8,108	50,000
Brit. Somaliland	59,846	153,000
Brit. East Af.	433,214	4,908,000
It. Somaliland	146,718	400,000
Rio de Oro, etc.	82,124	315,000
Fr. West Africa	680,617	12,700,000
Gambia	8,707	90,000
Port. Guinea	13,089	170,000
Sierra Leone	26,911	1,100,000
Liberia	36,834	1,000,000
Gold Coast	78,533	1,700,000
Togoland	33,668	900,000
Nigeria	361,004	23,700,000
Kamerun	191,120	3,500,000
Fr. Equatorial Af.	680,308	8,500,000
Belgian Kongo	926,872	19,000,000
Angola, etc.	490,787	3,840,000
Mozambique	295,779	2,300,000
Zanzibar	960	250,000
Ger. S. W. Africa	317,953	210,000
Ger. E. Africa	374,234	6,855,000
Rhodesia	408,494	1,350,000
Transvaal	114,286	1,345,000
Or. Free State	48,340	387,000
Natal	34,710	1,100,000
C. of Good Hope	276,988	2,410,000
Other Br. S. Af.	313,926	1,394,000

Africa (continued).

	Sq. Miles.	POPULATION.
Madagascar	228,610	2,619,000
Is. of Indian O.	3,876	666,000
Canary Islands	2,944	420,000
Cape Verde Is.	1,476	147,000
S. Atlantic Is.	126	6,000

Asia.

Arctic Islands	14,896	.....
Siberia	4,899,359	5,712,000
Kirghiz Steppe	706,253	2,461,000
Russian Turk.	641,578	5,261,000
Lake Aral and Caspian Sea	195,551	.....
Transcaucasia	95,801	5,516,000
Khiva, Rus. dep'cy	23,167	500,000
Bokhara	79,154	1,500,000
Russia in Asia	6,655,759	20,950,000
Isl. of Cyprus	3,584	237,000
Turkey in Asia	683,155	17,153,000
Sinai Pen. (Egypt)	22,781	25,000
Arabia	879,984	950,000
Oman	74,842	1,000,000
Aden, etc.	15,870	252,000
Persia	635,163	9,000,000
Afghanistan	240,937	4,550,000
India Proper	1,450,734	283,060,000
Burma	264,239	10,491,000
Baluchistan	141,628	835,000
Ceylon, etc.	25,449	3,608,000
Straits Settl's	35,571	1,452,000
Brit. India, etc.	1,917,621	299,446,000
Nepal, Bhutan	72,590	3,200,000
Port. India	1,413	572,000
French India	197	273,000
Tonkin	46,025	7,000,000
Anam	52,126	4,620,000
Laos	98,460	605,000
Cochin China	21,970	2,262,000
Cambodia	37,115	1,102,000
Kwangchau	270	60,000
Fr. Indo-China, etc.	256,463	15,922,000
Siam	244,798	6,320,000
China Proper	1,496,972	407,337,000
Manchuria	362,671	8,500,000
Mongolia	1,076,337	2,580,000
Chinese Turk.	550,601	1,200,000
Tibet	814,319	6,430,000
China, etc.	4,300,900	426,047,000
Hongkong and Weihaiwei	687	523,000
Kiauchau	194	84,000
Macao	4	79,000
Korea	84,251	9,670,000
Japanese Empire	177,359	50,006,000
Luzon Group	49,262	4,066,000
Visayas	21,638	2,863,000
Mindanao Gr.	37,849	580,000
Palawan Group	5,238	36,000
Sulu Islands	1,039	91,000
Philippine Is.	115,026	7,636,000
Sumatra Group	185,039	3,757,000
Java Group	50,777	25,698,000
Borneo Group	289,948	1,737,000
Celebes Group	71,784	1,098,000
Moluccas, etc.	75,344	2,411,000
As. East Indies	787,918	43,237,000

Australia, etc.

Victoria	87,884	1,201,000
New S. Wales	310,660	1,359,000
Queensland	668,497	503,000
South Australia	903,680	363,000
Western Australia	975,920	184,000
Tasmania	26,215	173,000
Natives	.....	200,000
Com. of Australia	2,972,865	3,983,000
New Zealand Gr.	104,663	937,000
New Guinea Gr.	311,032	700,000
Bismarck Arch.	18,186	190,000
Solomon Is.	13,475	200,000
New Hebrides	5,107	50,000
New Caledonia, etc.	7,634	51,000
Fiji Islands	8,046	118,000
Samoa Islands	1,076	39,000

Australia, etc. (continued).

	Sq. Miles.	POPULATION.
Hawaii	4,015	55,000
Maui and Lanai	863	.....
Kahoolawe	69	30,000
Molokai	201	.....
Oahu	600	82,000
Kauai, Niihau, etc.	641	25,000
Hawaiian Islands	6,449	192,000
Small Pacific Is.	7,911	157,000

United States.

Population according to the Federal Census of 1910.

Alabama	51,998	2,138,093
Arizona	113,956	204,354
Arkansas	53,335	1,574,449
California	158,297	2,377,549
Colorado	103,948	799,024
Connecticut	4,965	1,114,756
Delaware	2,370	202,322
Dist. of Columbia	70	331,069
Florida	58,666	752,619
Georgia	59,265	2,609,121
Idaho	84,313	325,594
Illinois	56,665	5,638,591
Indiana	36,354	2,700,876
Iowa	56,147	2,224,771
Kansas	82,158	1,690,949
Kentucky	40,598	2,289,905
Louisiana	48,506	1,656,388
Maine	33,040	742,371
Maryland	12,327	1,295,346
Massachusetts	8,266	3,366,416
Michigan	57,980	2,810,173
Minnesota	84,682	2,075,708
Mississippi	46,865	1,797,114
Missouri	69,420	3,293,335
Montana	146,572	376,053
Nebraska	77,520	1,192,214
Nevada	110,690	81,875
New Hampshire	9,341	430,572
New Jersey	8,224	2,537,167
New Mexico	122,634	327,301
New York	49,204	9,113,614
North Carolina	52,426	2,206,287
North Dakota	70,837	577,056
Ohio	41,040	4,767,121
Oklahoma	70,057	1,657,155
Oregon	96,699	672,765
Pennsylvania	45,126	7,665,111
Rhode Island	1,248	642,610
South Carolina	30,989	1,515,400
South Dakota	77,615	583,888
Tennessee	42,022	2,184,789
Texas	265,896	3,896,542
Utah	84,990	373,351
Vermont	9,564	355,956
Virginia	42,627	2,061,612
Washington	69,127	1,141,990
West Virginia	24,170	1,221,119
Wisconsin	56,066	2,333,860
Wyoming	97,914	145,965
Part of the Great Lakes	61,730	.....
Main Body	3,088,519	91,972,266

Outlying Territory, etc.

Alaska Territory	590,884	64,356
Hawaii Territory	6,449	191,900
Porto Rico . . .	3,435	1,118,012
Philippine Is. ('03)	115,026	7,635,426
Tutuila, etc. . .	77	5,800
Guam.	210	11,973
Panama Canal Zone.	474	127,362
Persons in the military and naval service of the United States station- ed abroad		55,608
<i>Total Outlying</i>	<i>716,555</i>	<i>9,210,446</i>
<i>Grand Total</i>	<i>3,805,074</i>	<i>101,182,719</i>

POPULATION OF THE PRINCIPAL CITIES OF THE UNITED STATES.—1900 AND 1910.

	Pop. 1910.	Pop. 1900.		Pop. 1910.	Pop. 1900.		Pop. 1910.	Pop. 1900.		Pop. 1910.	Pop. 1900.
Aberdeen, S.D.	10,753	4,087	Dubuque, Iowa	38,494	36,297	Louisville, Ky.	223,928	204,731	Providence, R.I.	224,326	175,597
Akron, Ohio	69,067	42,728	Duluth, Minn.	78,466	52,969	Lowell, Mass.	106,294	94,969	Pueblo, Col.	44,395	28,157
Alameda, Cal.	23,383	16,464	Durham, N.C.	18,241	6,679	Lynchburg, Va.	29,494	18,891	Quincy, Ill.	36,587	36,252
Albany, N.Y.	100,263	94,161	East Liverpool, Ohio	20,387	16,485	Lynn, Mass.	89,336	68,513	Quincy, Mass.	32,642	23,899
Albuquerque, N.M.	11,020	6,238	Easton, Pa.	28,523	25,238	Macon, Ga.	40,665	23,272	Racine, Wis.	38,002	29,102
Alexandria, Va.	15,329	14,528	East Orange, N.J.	34,371	21,506	McKeesport, Pa.	42,694	34,227	Raleigh, N.C.	19,218	13,643
Allentown, Pa.	51,913	35,416	East St. Louis, Ill.	58,547	29,655	Madison, Wis.	25,531	19,164	Reading, Pa.	96,071	78,961
Alpena, Mich.	12,706	11,802	Eau Claire, Wis.	18,310	17,517	Malden, Mass.	44,404	33,664	Reno, Nev.	10,867	4,500
Altoona, Pa.	52,127	38,973	Elgin, Ill.	25,976	22,433	Manchester, N.H.	70,063	56,987	Richmond, Ind.	22,324	18,226
Amsterdam, N.Y.	31,267	20,929	Elizabeth, N.J.	73,409	52,130	Manistee, Mich.	12,381	14,260	Richmond, Va.	127,628	85,050
Anaconda, Mont.	10,134	9,453	Elizabethtown, N.Y.	37,176	35,672	Manikato, Minn.	10,365	10,599	Roanoke, Va.	34,874	21,495
Anderson, Ind.	22,476	20,178	El Paso, Tex.	39,279	15,906	Mansfield, Ohio	20,768	17,640	Rochester, N.Y.	218,149	162,608
Annapolis, Md.	8,609	8,525	Erie, Pa.	66,625	52,733	Marinette, Wis.	14,610	16,195	Rockford, Ill.	45,401	31,051
Ann Arbor, Mich.	14,817	14,509	Escanaba, Mich.	13,194	9,549	Marquette, Mich.	11,503	10,058	Rock Island, Ill.	24,335	19,493
Anniston, Ala.	12,794	9,695	Evanston, Ill.	24,978	19,250	Medford, Mass.	23,150	18,244	Rome, Ga.	12,099	7,291
Ansonia, Conn.	15,152	12,681	Evansville, Ind.	69,647	59,007	Memphis, Tenn.	131,105	102,320	Rome, N.Y.	20,497	15,349
Appleton, Wis.	16,773	15,085	Everett, Mass.	33,484	24,336	Menominee, Mich.	10,507	12,818	Rutland, Vt.	13,546	11,449
Argenta, Ark.	11,138	5,140	Everett, Wash.	24,814	7,838	Meriden, Conn.	27,265	24,296	Sacramento, Cal.	44,696	29,232
Asheville, N.C.	18,762	14,694	Fall River, Mass.	119,295	104,863	Meridian, Miss.	23,285	14,050	Saginaw, Mich.	50,510	42,345
Astoria, Ore.	9,599	8,381	Fargo, N.D.	14,331	9,589	Milwaukee, Wis.	373,857	285,315	St. Joseph, Mo.	77,403	102,979
Atchison, Kan.	16,429	15,722	Fitchburg, Mass.	37,826	31,631	Minneapolis, Minn.	301,408	202,718	St. Louis, Mo.	687,029	575,238
Athens, Ga.	14,913	10,245	Flint, Mich.	38,550	13,103	Missoula, Mont.	12,869	4,366	St. Paul, Minn.	214,744	163,065
Atlanta, Ga.	154,839	89,872	Fond du Lac, Wis.	18,797	15,110	Mobile, Ala.	51,521	38,469	Salem, Mass.	43,697	35,956
Atlantic City, N.J.	46,150	27,838	Fort Scott, Kan.	10,463	10,322	Moline, Ill.	24,199	17,248	Salem, Ore.	14,094	4,258
Auburn, Me.	15,064	12,951	Fort Smith, Ark.	23,975	11,587	Montgomery, Ala.	38,136	30,346	Salt Lake City, Utah	92,777	53,531
Auburn, N.Y.	34,668	30,345	Fort Wayne, Ind.	63,933	45,115	Montpelier, Vt.	7,856	6,266	San Antonio, Tex.	96,614	53,321
Augusta, Ga.	41,040	39,441	Fort Worth, Tex.	73,312	26,688	Mount Vernon, N.Y.	30,919	21,228	San Diego, Cal.	39,578	17,700
Augusta, Me.	13,211	11,683	Frankfort, Ky.	10,465	9,487	Muncie, Ind.	24,005	20,942	San Francisco, Cal.	416,912	342,782
Aurora, Ill.	29,807	24,147	Frederick, Md.	10,411	9,256	Muskegon, Mich.	24,062	20,818	San Jose, Cal.	28,946	21,500
Austin, Tex.	29,860	22,258	Fresno, Cal.	24,892	12,470	Muskogee, Okla.	25,278	4,254	Santa Fe, N.M.	5,072	5,603
Baltimore, Md.	558,485	508,957	Galesburg, Ill.	22,089	18,607	Nashua, N.H.	26,005	23,898	Sault Ste. Marie, Mich.	12,615	10,538
Bangor, Me.	24,803	21,850	Galveston, Tex.	36,981	37,789	Nashville, Tenn.	110,364	80,865	Savannah, Ga.	65,064	54,244
Barre, Vt.	10,734	8,448	Glocester, Mass.	24,398	20,121	Natchez, Miss.	11,791	12,210	Schenectady, N.Y.	72,826	31,682
Baron Rouge, La.	14,897	11,269	Gloversville, N.Y.	20,642	18,349	New Albany, Ind.	20,629	20,628	Scranton, Pa.	129,867	102,026
Battle Creek, Mich.	25,267	18,563	Grand Forks, N.D.	12,478	7,652	Newark, N.J.	347,469	246,070	Seattle, Wash.	237,194	80,671
Bay City, Mich.	45,166	27,628	Grand Island, Neb.	10,326	7,554	Newark, Ohio	25,404	18,157	Sedalia, Mo.	17,822	15,231
Bayonne, N.J.	55,545	32,722	Grand Rapids, Mich.	112,571	87,565	New Bedford, Mass.	96,652	62,442	Selma, Ala.	13,649	8,713
Beaumont, Tex.	20,640	9,427	Great Falls, Mont.	13,948	14,930	New Britain, Conn.	43,916	25,998	Sheboygan, Wis.	26,398	22,962
Bellevue, Ill.	21,122	17,484	Green Bay, Wis.	25,236	18,684	New Brunswick, N.J.	23,388	20,006	Shenandoah, Pa.	25,774	20,321
Bellingham, Wash.	24,298	11,062	Greensboro, N.C.	15,895	10,035	Newburgh, N.Y.	27,805	24,943	Sheridan, Wyo.	8,408	1,559
Beloit, Wis.	15,125	10,436	Greenville, S.C.	15,741	11,860	New Castle, Pa.	36,280	28,339	Shreveport, La.	28,015	16,013
Berkeley, Cal.	40,434	13,214	Hagerstown, Md.	16,507	13,591	New Haven, Conn.	133,605	108,027	Sioux City, Iowa	47,828	33,111
Berlin, N.H.	11,780	8,886	Hamilton, Ohio	35,279	23,914	New London, Conn.	19,659	17,548	Sioux Falls, S.D.	14,094	10,266
Biddeford, Me.	17,079	16,145	Hammoud, Ind.	20,925	12,876	New Orleans, La.	339,075	287,104	Somerville, Mass.	77,236	61,643
Billings, Mont.	10,031	3,221	Hannibal, Mo.	18,341	12,780	Newport, Ky.	30,309	28,301	South Bend, Ind.	53,684	35,999
Binghamton, N.Y.	48,443	39,647	Harrisburg, Pa.	64,186	50,167	Newport, R.I.	27,149	22,441	South Omaha, Neb.	26,259	26,001
Birmingham, Ala.	132,685	38,415	Hartford, Conn.	98,915	79,850	Newport News, Va.	20,205	19,635	Spartanburg, S.C.	17,517	11,395
Bismarck, N.D.	5,443	3,319	Hattiesburg, Miss.	11,733	4,175	New Rochelle, N.Y.	28,867	14,720	Spokane, Wash.	104,402	36,848
Bloomington, Ill.	25,768	23,286	Haverhill, Mass.	44,115	37,175	Newton, Mass.	39,806	33,587	Springfield, Ill.	51,678	34,159
Boise, Ida.	17,358	5,957	Hazleton, Pa.	25,452	14,230	New York, N.Y.	4,766,883	3,437,003	Springfield, Mass.	88,926	62,059
Boston, Mass.	670,585	560,892	Helena, Mont.	12,515	10,770	Manhattan Boro.	2,331,542	1,850,292	Springfield, Mo.	35,201	23,267
Bridgeport, Conn.	102,054	70,996	Henderson, Ky.	11,452	10,272	Brooklyn "	1,634,351	1,166,582	Springfield, Ohio	46,921	38,253
Brooklyn, Mass.	56,878	40,063	Hoboken, N.J.	70,321	59,364	Bronx "	430,980	200,507	Stamford, Conn.	25,138	15,997
Brookline, Mass.	27,792	19,935	Holyoke, Mass.	57,730	45,712	Queens "	284,041	152,999	Steubenville, Ohio	22,391	14,349
Brunswick, Ga.	10,182	9,081	Honolulu, Hawaii	52,183	39,306	Richmond "	85,969	67,021	Stillwater, Minn.	10,198	12,318
Buffalo, N.Y.	423,715	352,387	Hot Springs, Ark.	14,434	9,973	Niagara Falls, N.Y.	30,445	19,457	Stockton, Cal.	23,253	17,506
Burlington, Ia.	24,324	23,201	Houston, Tex.	78,800	44,633	Norfolk, Va.	67,452	46,624	Superior, Wis.	40,384	31,091
Burlington, Vt.	20,468	18,640	Huntington, W. Va.	31,161	11,923	Norristown, Pa.	27,875	22,265	Syracuse, N.Y.	137,249	108,374
Butte, Mont.	39,165	30,470	Hutchinson, Kan.	16,364	9,379	North Adams, Mass.	22,019	24,200	Tacoma, Wash.	83,743	37,714
Cambridge, Mass.	104,839	91,886	Indianapolis, Ind.	233,650	169,164	Northampton, Mass.	19,431	18,643	Tallahassee, Fla.	5,018	2,981
Camden, N.J.	94,538	75,935	Ironwood, Mich.	12,821	9,705	Norwich, Conn.	20,367	17,251	Tampa, Fla.	37,782	15,839
Canton, Ohio	50,217	30,667	Ishpeming, Mich.	12,448	13,255	Oakland, Cal.	150,174	66,960	Taunton, Mass.	34,259	31,036
Carson City, Nev.	2,466	2,100	Jackson, Mich.	31,433	25,180	Ogden, Utah	25,580	16,313	Terre Haute, Ind.	58,157	36,673
Cedar Rapids, Ia.	32,811	25,656	Jackson, Miss.	21,262	7,816	Oklahoma City, Okla.	64,205	10,037	Toledo, Ohio	168,497	131,822
Charleston, S.C.	58,833	55,807	Jackson, Tenn.	15,779	14,511	Olympia, Wash.	6,996	3,863	Topeka, Kan.	43,684	33,608
Charleston, W. Va.	22,996	11,099	Jacksonville, Fla.	57,699	28,429	Omaha, Neb.	124,096	102,555	Trenton, N.J.	96,815	73,307
Charlotte, N.C.	34,014	18,091	Jamestown, N.Y.	31,297	22,892	Orange, N.J.	29,630	24,141	Trinidad, Col.	10,204	5,345
Chattanooga, Tenn.	44,604	30,154	Jefferson City, Mo.	11,850	9,664	Oshkosh, Wis.	33,062	28,284	Troy, N.Y.	76,813	60,651
Chelsea, Mass.	32,452	34,072	Jersey City, N.J.	267,779	206,433	Oswego, N.Y.	23,368	22,199	Tucson, Ariz.	13,193	7,531
Chester, Pa.	38,537	33,988	Johnstown, Pa.	55,482	35,936	Ottumwa, Iowa	22,012	18,197	Utica, N.Y.	74,419	56,383
Cheyenne, Wyo.	11,320	14,087	Joliet, Ill.	34,670	29,353	Owensboro, Ky.	16,011	13,189	Vicksburg, Miss.	20,814	14,848
Chicago, Ill.	2,185,283	1,698,575	Joplin, Mo.	32,073	26,023	Paducah, Ky.	22,760	19,446	Virginia, Minn.	10,473	2,962
Chicopee, Mass.	25,401	19,167	Kalamazoo, Mich.	39,437	24,404	Parkersburg, W. Va.	17,842	11,703	Waco, Tex.	26,425	20,686
Cincinnati, Ohio	363,591	325,902	Kansas City, Kan.	82,331	51,418	Pasadena, Cal.	30,291	9,117	Walla Walla, Wash.	19,364	10,449
Cleveland, Ohio	560,663	381,768	Kansas City, Mo.	248,381	163,752	Passaic, N.J.	54,773	27,777	Waltham, Mass.	27,834	23,481
Clinton, Ia.	25,577	22,698	Keene, N.H.	10,068	9,165	Paterson, N.J.	125,600	105,171	Washington, D.C.	331,069	278,718
Cohoes, N.Y.	24,709	23,910	Kenosha, Wis.	21,371	11,606	Pawtucket, R.I.	51,622	39,231	Waterbury, Conn.	73,141	45,859
Colorado Spr's, Col.	29,078	21,085	Key West, Fla.	19,945	17,114	Pensacola, Fla.	22,982	17,747	Waterloo, Iowa	26,693	12,580
Columbia, S.C.	26,319	21,108	Kingston, N.Y.	25,908	24,535	Peoria, Ill.	66,950	56,100	Watertown, N.Y.	26,730	21,696
Columbus, Ga.	20,554	17,614	Knoxville, Tenn.	36,346	32,637	Perth Amboy, N.J.	32,121	17,699	Waterville, Me.	11,458	9,477
Columbus, Ohio	181,511	125,560	Laconia, N.H.	10,183	8,042	Petersburg, Va.	24,127	21,810	Wausau, Wis.	16,560	12,354
Concord, N.H.	21,497	19,632	La Crosse, Wis.	30,417	28,895	Philadelphia, Pa.	1,549,008	1,293,697	Waycross, Ga.	14,485	5,919
Council Bluffs, Ia.	29,292	25,802	Lafayette, Ind.	20,081	18,116	Phoenix, Ariz.	11,134	5,544	West Hoboken, N.J.	35,403	23,094
Covington, Ky.	53,270	42,938	Lancaster, Pa.	47,227	41,459	Pierre, S.D.	3,656	2,306	Wheeling, W. Va.	41,641	38,878
Cumberland, Md.	21,839	17,128	Lansing, Mich.	31,229	16,485	Pine Bluff, Ark.	15,102	11,496	Wichita, Kan.	52,450	24,671
Dallas, Tex.	92,104	42,638	Laramie, Wyo.	8,237	8,207	Pittsburg, Kan.	14,755	10,112	Wilkes-Barre, Pa.	67,105	51,721
Danbury, Conn.	20,234	16,587	Laredo, Tex.	14,855	13,429	Pittsburg, Pa.	533,905	451,512	Williamsport, Pa.	31,860	28,757
Danville, Ill.	27,871	16,354	Lawrence, Kan.	12,374	10,862	Pittsfield, Mass.	32,121	21,766	Wilmington, Del.	87,411	76,508
Danville, Va.	19,020	16,520	Lawrence, Mass.	85,892	62,559	Plainfield, N.J.	20,550	15,369	Wilmington, N.C.	25,748	20,976
Davenport, Iowa	43,028	35,254	Leavenworth, Kan.	19,363	20,735	Pontiac, Mich.	14,532	9,769	Winona, Minn.	18,583	19,714
Dayton, Ohio	116,577	85,333	Lewiston, Me.	26,247	23,761	Port Huron, Mich.	18,863	19,158	Winston, N.C.	17,167	10,008
Decatur, Ill.	31,140	20,764	Lexington Ky.	35,099	26,369	Portland, Me.	58,571	50,145	Woonsocket, R.I.	38,125	28,204
Denver, Col.	213,381	133,859	Lima, Ohio	30,508	21,723	Portland, Ore.	207,214	90,426	Worcester, Mass.	145,986	118,421
Des Moines, Iowa	86,398	62,139	Lincoln, Neb.	43,973	40,169	Portsmouth, N.H.	11,269	10,637	Yonkers, N.Y.	79,803	47,931
Detroit, Mich.	465,766	285,704	Little Rock, Ark.	45,941	38,307	Portsmouth, Ohio					

POPULATION OF THE PRINCIPAL FOREIGN CITIES.

Aberdeen, Scotland	163,000	(11)	Cuzco, Peru	20,000	Lodz, Russia	815,000	(97)	Rosario, Argentina	150,000	(08)
Adelaide, Australia	163,000	(01)	Damascus, Turkey	250,000	London, Canada	47,000	(11)	Rotterdam, Netherlands	415,000	(09)
Alexandria, Egypt	332,000	(07)	Delhi, India	200,000	London, England	7,233,000	(11)	Roubaix, France	123,000	(11)
Algiers, Algeria	138,000	(06)	Dortmund, Germany	214,000	Lucknow, India	264,000	(01)	Rouen, France	125,000	(11)
Amsterdam, Netherlands	567,000	(09)	Dresden, Germany	547,000	Lyons, France	524,000	(01)	Saigon, French Indo-China	51,000	(06)
Antofagasta, Chile	33,000	(07)	Dublin, Ireland	300,000	Madras, India	509,000	(01)	St. John, Canada	43,000	(11)
Antwerp, Belgium	221,000	(10)	Dulburg, Germany	209,000	Madrid, Spain	572,000	(10)	St. John, Newfoundland	30,000	(01)
Arequipa, Peru	85,000		Dundee, Scotland	165,000	Magdeburg, Germany	250,000	(10)	St. Louis, Senegal	24,000	(04)
Asuncion, Paraguay	60,000	(05)	Dunedin, New Zealand	36,000	Malaga, Spain	183,000	(10)	St. Petersburg, Russia	1,267,000	(97)
Athens, Greece	168,000	(07)	Dusseldorf, Germany	358,000	Managua, Nicaragua	85,000	(06)	Salford, England	231,000	(11)
Auckland, New Zealand	35,000	(06)	Edinburgh, Scotland	320,000	Manchester, England	715,000	(11)	Saloniki, Turkey	150,000	
Bagdad, Turkey	145,000		Edmonton, Canada	25,000	Mandalay, Burma	184,000	(01)	San Jose, Costa Rica	26,000	(04)
Beha, Brazil	230,000	(00)	Essen, Germany	295,000	Manila, Philippine Islands	220,000	(08)	San Juan, Porto Rico	48,000	(09)
Baku, Transcaucasia	112,000	(97)	Fez, Morocco	140,000	Mannheim, Germany	198,000	(10)	San Luis Potosi, Mexico	83,000	(10)
Ballararat, Australia	50,000	(01)	Florence, Italy	233,000	Maracaibo, Venezuela	84,000	(94)	San Salvador, Salvador	60,000	(01)
Bangkok, Siam	400,000		Frankfurt am Main, Germany	415,000	Maranhão, Brazil	32,000	(00)	Santiago, Chile	408,000	(07)
Barcelona, Spain	560,000	(10)	Fredericton, Canada	7,000	Marseilles, France	551,000	(11)	Santiago de Cuba	45,000	(07)
Barfurs, Persia	50,000		Fuchau, China	624,000	Maskat, Oman	25,000		Santos, Brazil	35,000	(00)
Bari, Italy	104,000	(11)	Geneva, Switzerland	123,000	Matanzas, Cuba	36,000	(07)	São Paulo, Brazil	848,000	(06)
Barranquilla, Colombia	40,000	(05)	Genoa, Italy	272,000	Mecca, Turkey	60,000		Seoul, Korea	197,000	(02)
Basle, Switzerland	132,000	(10)	Georgetown, British Guiana	58,000	Medellin, Colombia	60,000	(05)	Seville, Spain	155,000	(10)
Batavia, Java	139,000	(05)	Ghent, Belgium	165,000	Melbourne, Australia	496,000	(01)	Shanghai, China	651,000	(04)
Beirut, Turkey	120,000		Glasgow, Scotland	738,000	Messina, Italy	126,000	(11)	Sheffield, England	351,000	(01)
Belfast, Ireland	886,000	(11)	Göteborg, Sweden	168,000	Mexico, Mexico	471,000	(10)	Singapore, Straits Settlements	229,000	(01)
Belgrade, Serbia	78,000	(05)	Graz, Austria	152,000	Milan, Italy	599,000	(11)	Smyna, Turkey	201,000	
Benares, India	209,000	(01)	Guadalajara, Mexico	119,000	Mollendo, Peru	3,000		Sofia, Bulgaria	108,000	(10)
Bergen, Norway	77,000	(10)	Guayaquil, Ecuador	80,000	Monterey, Mexico	81,000	(10)	Stettin, Germany	236,000	(10)
Berlin, Germany	2,071,000	(10)	Hague, Netherlands	278,000	Montevideo, Uruguay	292,000	(08)	Stockholm, Sweden	342,000	(10)
Bern, Switzerland	86,000	(10)	Halderabad, India	449,000	Montreal, Canada	471,000	(11)	Stoke-on-Trent, England	235,000	(11)
Bilbao, Spain	94,000	(10)	Halifax, Canada	47,000	Moscow, Morocco	45,000		Strassburg, Germany	178,000	(10)
Birmingham, England	526,000	(11)	Halle, Germany	181,000	Moscow, Russia	989,000	(97)	Stuttgart, Germany	286,000	(10)
Bloemfontein, Orange Free State	34,000	(04)	Hamburg, Germany	932,000	Mukden, Manchuria	200,000		Suifu, China	500,000	(04)
Bogota, Colombia	100,000	(05)	Hamilton, Canada	82,000	Munich, Germany	595,000	(10)	Sucre, Bolivia	21,000	(00)
Bologna, Italy	173,000	(11)	Hangchow, China	300,000	Ngoya, Japan	878,000	(09)	Sydney, Australia	482,000	(01)
Bolton, England	181,000	(11)	Hankow, China	370,000	Nantes, France	171,000	(11)	Tabriz, Persia	200,000	
Bombay, India	776,000	(11)	Hanoi, French Indo-China	103,000	Naples, Italy	723,000	(11)	Talca, Chile	38,000	(07)
Bordeaux, France	262,000	(11)	Hanover, Germany	302,000	Newcastle, England	267,000	(11)	Tanararivo, Madagascar	65,000	(06)
Bradford, England	247,000	(10)	Havana, Cuba	297,000	New Guatemala, Guatemala	97,000	(04)	Tashkend, Turkestan	157,000	(97)
Bremen, Germany	512,000	(10)	Havre, France	186,000	Nice, France	143,000	(11)	Tehuacalpa, Honduras	85,000	
Breslau, Germany	512,000	(10)	Hobart, Tasmania	25,000	Ningpo, China	260,000	(04)	Teheran, Persia	280,000	
Brisbane, Australia	120,000	(01)	Hull, England	226,000	Nottingham, England	260,000	(11)	Tientsin, China	750,000	(04)
Bristol, England	357,000	(11)	Iquique, Chile	40,000	Nuremberg, Germany	383,000	(10)	Tiflis, Transcaucasia	161,000	(97)
Brussels, Belgium	196,000	(10)	Irkutsk, Siberia	52,000	Odesa, Russia	405,000	(97)	Timmen, Siberia	30,000	(97)
Bucharest, Roumania	282,000	(99)	Isfahan, Persia	90,000	Oporto, Portugal	168,000	(00)	Tokyo, Japan	2,180,000	(11)
Budaapest, Hungary	882,000	(10)	Jerusalem, Turkey	70,000	Oran, Algeria	100,000	(06)	Toronto, Canada	377,000	(11)
Buenos Aires, Argentina	1,189,000	(05)	Johannesburg, The Transvaal	159,000	Osaka, Japan	1,227,000	(09)	Toulouse, France	150,000	(11)
Bushire, Persia	20,000		Kabul, Afghanistan	100,000	Ottawa, Canada	57,000	(11)	Trebizond, Turkey	85,000	
Calcutta, India	1,127,000	(01)	Kandahar, Afghanistan	50,000	Palermo, Italy	342,000	(11)	Trieste, Austria	290,000	(10)
Calgary, Canada	44,000	(11)	Kharkov, Russia	175,000	Pana, Brazil	100,000	(00)	Tripoli, Tripoli	30,000	
Callao, Peru	34,000		Kief, Russia	247,000	Paramaribo, Dutch Guiana	84,000	(05)	Tucuman, Argentina	55,000	(08)
Canton, China	900,000	(04)	Kiel, Germany	211,000	Paris, France	2,888,000	(11)	Tunis, Tunis	250,000	
Cape Town, Cape of Good Hope	78,000	(04)	Kimberley, Cape of Good Hope	34,000	Peking, China	1,000,000		Turin, Italy	428,000	(11)
Caracas, Venezuela	78,000	(94)	Königsberg, Germany	246,000	Pernambuco, Brazil	120,000	(00)	Valencia, Spain	214,000	(00)
Cardiff, Wales	182,000	(11)	Kyoto, Japan	448,000	Perth, Australia	36,000	(01)	Valencia, Venezuela	89,000	(94)
Catania, Italy	212,000	(11)	La Guaira, Venezuela	14,000	Port Elizabeth, Cape of Good Hope	38,000	(04)	Valparaiso, Chile	188,000	(07)
Cayenne, French Guiana	13,000	(01)	Lahore, India	208,000	Porto Alegre, Brazil	80,000	(00)	Vancouver, Canada	100,000	(11)
Ceñije, Montenegro	4,000		La Paz, Bolivia	55,000	Port Said, Egypt	50,000	(07)	Venice, Italy	161,000	(11)
Charlottenburg, Germany	805,000	(10)	La Plata, Argentina	95,000	Portsmouth, England	231,000	(11)	Vera Cruz, Mexico	45,000	(10)
Charlottetown, Canada	12,000	(01)	Lassa, Tibet	25,000	Prague, Austria	225,000	(10)	Victoria, Canada	32,000	(11)
Chemnitz, Germany	287,000	(10)	Leeds, England	105,000	Pretoria, The Transvaal	37,000	(04)	Vienna, Austria	2,081,000	(10)
Chilian, Chile	34,000	(07)	Leicester, England	227,000	Puebla, Mexico	101,000	(10)	Vilna, Russia	160,000	(97)
Christiania, Norway	244,000	(10)	Leipzig, Germany	588,000	Quebec, Canada	78,000	(11)	Vladivostok, Siberia	29,000	(97)
Cochabamba, Bolivia	22,000	(00)	Lemberg, Austria	207,000	Quito, Ecuador	51,000	(06)	Warsaw, Russia	688,000	(97)
Cologne, Germany	516,000	(10)	Leon, Mexico	57,000	Rangoon, Burma	235,000	(01)	Wellington, New Zealand	59,000	(06)
Colombo, Ceylon	158,000	(01)	Liege, Belgium	175,000	Regina, Canada	30,000	(11)	West Ham, England	289,000	(11)
Concepcion, Chile	55,000	(07)	Lille, France	215,000	Riga, Russia	256,000	(97)	Winnipeg, Canada	136,000	(11)
Constantinople, Turkey	1,125,000		Lima, Peru	141,000	Rio de Janeiro, Brazil	811,000	(06)	Yokohama, Japan	894,000	(09)
Copenhagen, Denmark	462,000	(11)	Lisbon, Portugal	356,000	Rixdorf, Germany	237,000	(10)	Zanzibar, Africa	70,000	
Cordova, Argentina	53,000	(05)	Liverpool, England	747,000	Rome, Italy	537,000	(11)	Zurich, Switzerland	191,000	(10)

HEIGHTS OF MOUNTAINS AND PLATEAUS.

	FEET.		FEET.		FEET.	Wealth in million dollars.	Earnings in million dollars.	An. Earn. per money earner.	Inhab. per sq. mile.	
Abyssinian Highland.....	6,500	Demavend, volcano, Persia.....	18,546	Mexican Plateau, Mexico.....	7,500	United States (main body)...	73,480	14,957	\$473	31
Aconcagua, Argentina.....	23,082	Elburz, Mount, Caucasus.....	18,498	Mitchell, Mount, North Carolina.....	6,711	Great Britain and Ireland...	56,568	6,880	406	874
Alps, Switzerland.....	8,500	Etna, volcano, Sicily.....	10,874	Mongolian Plateau, Asia.....	8,500	France.....	46,512	5,755	888	191
Altai Mountains, Mongolia.....	6,300	Everest, Mount, Nepal.....	29,002	Orizaba, volcano, Mexico.....	18,314	Germany.....	88,650	6,168	258	809
Andes, South America.....	13,000	Fremont Peak, Wyoming.....	13,790	Pikes Peak, Colorado.....	14,111	European Russia.....	80,840	4,819	100	52
Apennines, Italy.....	4,000	Fujiyama, volcano, Japan.....	14,177	Popocatepetl, volcano, Mexico.....	17,784	Austria-Hungary.....	21,658	3,894	164	196
Appalachian Mountains, U. S.....	2,500	Guiana Plateau.....	2,000	Pyrenees Mountains, Spain.....	8,000	Italy.....	15,168	2,098	160	818
Atlas Mountains, Africa.....	9,000	Hecla, volcano, Iceland.....	5,110	Rainier, Mount, Washington.....	14,363	Spain.....	11,424	1,810	179	99
Australian Mountains, E. Australia.....	5,000	Himalaya Mountains, Asia.....	19,000	Rocky Mountain Highland, U. S.....	5,000	Belgium.....	4,742	869	296	661
Balkan Mountains, Europe.....	4,500	Hindu-Kush, Afghanistan.....	18,000	Rocky Mountains, North America.....	10,000	Netherlands.....	4,224	595	275	466
Blanc, Mont, France.....	15,744	Hooker, Mount, Canada.....	12,000	Sahama, volcano, Bolivia.....	22,350	Sweden and Norway.....	3,792	682	213	27
Bohmerwald, Austria-Hungary.....	2,500	Iran Plateau, Persia.....	5,000	Shasta, Mount, California.....	14,380	Denmark.....	2,429	288	290	156
Bolivian Plateau.....	12,500	Jura Mountains, France.....	8,000	Sierra Nevada, United States.....	9,000	Switzerland.....	2,362	896	278	234
Brazilian Plateau.....	2,000	Karakoram Mountains, Tibet.....	18,500	Sorata, Bolivia.....	21,286	Portugal.....	1,973	807	175	145
Carpathian Mountains, Aus.-Hun.....	5,000	Kenia, Mount, Africa.....	18,000	St. Elias, Mount, Alaska-Canada.....	18,010	Greece.....	1,066	134	125	105
Cascade Mountains, North America.....	9,000	Kilimanjaro, Africa.....	20,000	Thian Shan, Asia.....	18,000	Balkan States.....	4,925	706	187	118
Caucasus Mountains, Russia.....	10,000	Kiölen Mountains, Norway.....	8,000	Tibet Plateau.....	15,000	Total Europe (exc. Turkey) 246,434	\$1,281	\$1,281	\$07	109
Chimborazo, volcano, Ecuador.....	20,517	Kuenlun, Tibet.....	18,000	Ural Mountains, Russia.....	3,500	Australia and New Zealand.....	5,165	1,082	580	2
Coast Ranges, United States.....	3,000	Longs Peak, Colorado.....	14,271	Vesuvius, volcano, Italy.....	4,205	Canada.....	4,814	878	368	2
Cotopaxi, volcano, Ecuador.....	16,291	Mauna Kea, Hawaii.....	18,953	Washington, Mount, N. H.....	6,279	Argentina.....	2,957	456	354	5
Dekkan Plateau, India.....	2,000	McKinley, Mount, Alaska.....	20,464	Whitney, Mount, California.....	14,502					

WEALTH AND EARNINGS. (Mulhall)

RIVERS AND THEIR BASINS.

River System.	An. Rainfall in Basin. Cubic Miles.	Area of Basin. Sq. Miles.	Longest Stream. Miles.	River System.	An. Rainfall in Basin. Cubic Miles.	Area of Basin. Sq. Miles.	Longest Stream. Miles.
Amazon (exc. Tocantins)	2,838.3	2,820,000	8,400	Danube	193.7	820,000	1,800
Kongo	1,213.0	1,500,000	2,500	Irawadi	180.8	180,000	(?)
Volga	1,035.4	1,150,000	2,500	Volga	152.3	590,000	2,300
Nile	892.1	1,300,000	8,900	Yukon	150.0	350,000	2,000
Mississippi-Missouri	678.0	1,250,000	4,200	Murray	140.0	350,000	1,100
Orinoco	603.8	425,000	1,500	Nelson-Saskatchewan	130.0	470,000	1,900
Niger	570.0	1,000,000	2,300	Hoang	117.7	390,000	2,800
Ganges-Brahmaputra	548.7	600,000	1,800	Magdalena	116.7	90,000	1,100
Yangtze	408.8	690,000	8,100	Mackenzie	115.0	680,000	2,100
St. Lawrence	338.9	565,000	2,100	Rio Grande	113.6	230,000	1,800
Yeniisei	330.0	1,500,000	3,000	Indus	104.4	360,000	1,900
Zambezi	300.0	580,000	1,600	Columbia	90.0	290,000	1,100
Ob	280.0	1,100,000	8,000	Euphrates	60.0	450,000	2,000
Lena	270.0	900,000	2,800	Dniester	56.0	197,000	1,300
Amur	240.0	750,000	2,700	Colorado	55.0	230,000	1,000
San Francisco	218.4	210,000	1,800	Orange	50.9	270,000	1,200
Mekong	200.0	280,000	2,600	Po	23.9	27,000	460

LAKES.

	Area. Sq. Miles.	Altitude. Feet.	Depth. Feet.
Caspien	169,884±	-85±	8,096±
Victoria	32,167	4,000±	620
Superior	31,200	602	1,008
Aral	20,000±	155±	320±
Urmia	20,000	581	502
Michigan	23,439	581	579
Tanganyika	14,000	2,670	1,800±
Baikal	13,127	1,400?	4,000±
Tchad	10,400±	1,100±	20±
Erie	9,500	593	500
Winnipeg	9,400	710	72
Balsash	8,500±	900±	100±
Ontario	7,240	247	785
Ladoga	7,000	75	742
Titicaca	3,201	12,500	907
Newman	2,800	145	220
Great Salt Lake	2,300±	4,500	100±
Dead Sea	1,353	-1,200	1,308±

INDEX AND PRONOUNCING VOCABULARY

KEY. — Vowels: *ā* in *lāte*, *ā* in *fāt*, *ā* in *cāre*, *ā* in *fār*, *ā* in *lāst*, *ā* in *fall*, *ā* in *was*, *ā* in *final*, *au* in *author*; *ē* in *mē*, *ē* in *mēt*, *bērry*, *e* in *vell*, *ē* in *tērm*, *e* in *novel*; *ī* in *fine*, *ī* in *tīn*, *ī* in *police*; *ō* in *nōte*, *ō* in *nōt*, *ō* in *són*, *ō* in *fōr*, *ō* in *dō*, *ō* in *wolf*; *ū* in *tūne*, *ū* in *nūt*, *ū* in *ryde* (= *o*), *ū* in *full*, *ū* = French *u*, *ua* = *wa*, *ue* = *we*; *ȳ* in *mȳ*, *ȳ* in *hȳmn*. CONSONANTS: *ç* in *çent*, *maçhine*, *c* in *can*; *ğ* in *ğem*, *ğ* in *ğet*; *K* = German *ch*; *n* = *ng*, *n* like *ny* in *barnyard*, *N* = *ng* in its effect (nasal) on the preceding vowel, but is itself silent; *ş* = *z*; *th* in *thine*; *z* = *gz*. *Italic letters are silent.*

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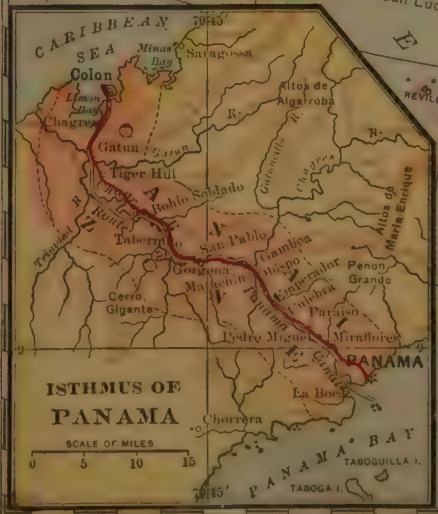


NORTH AMERICA

SCALE OF MILES
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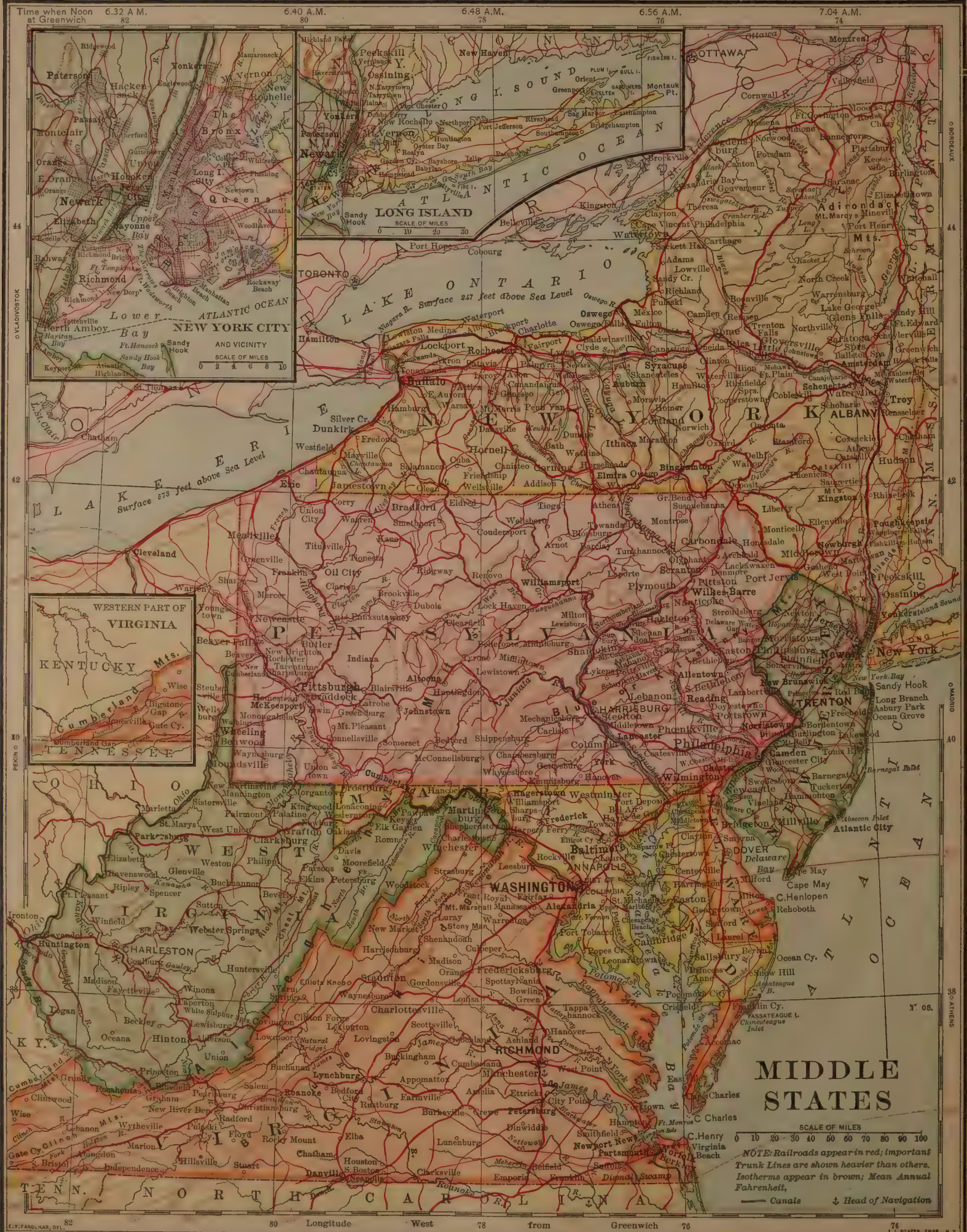
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.

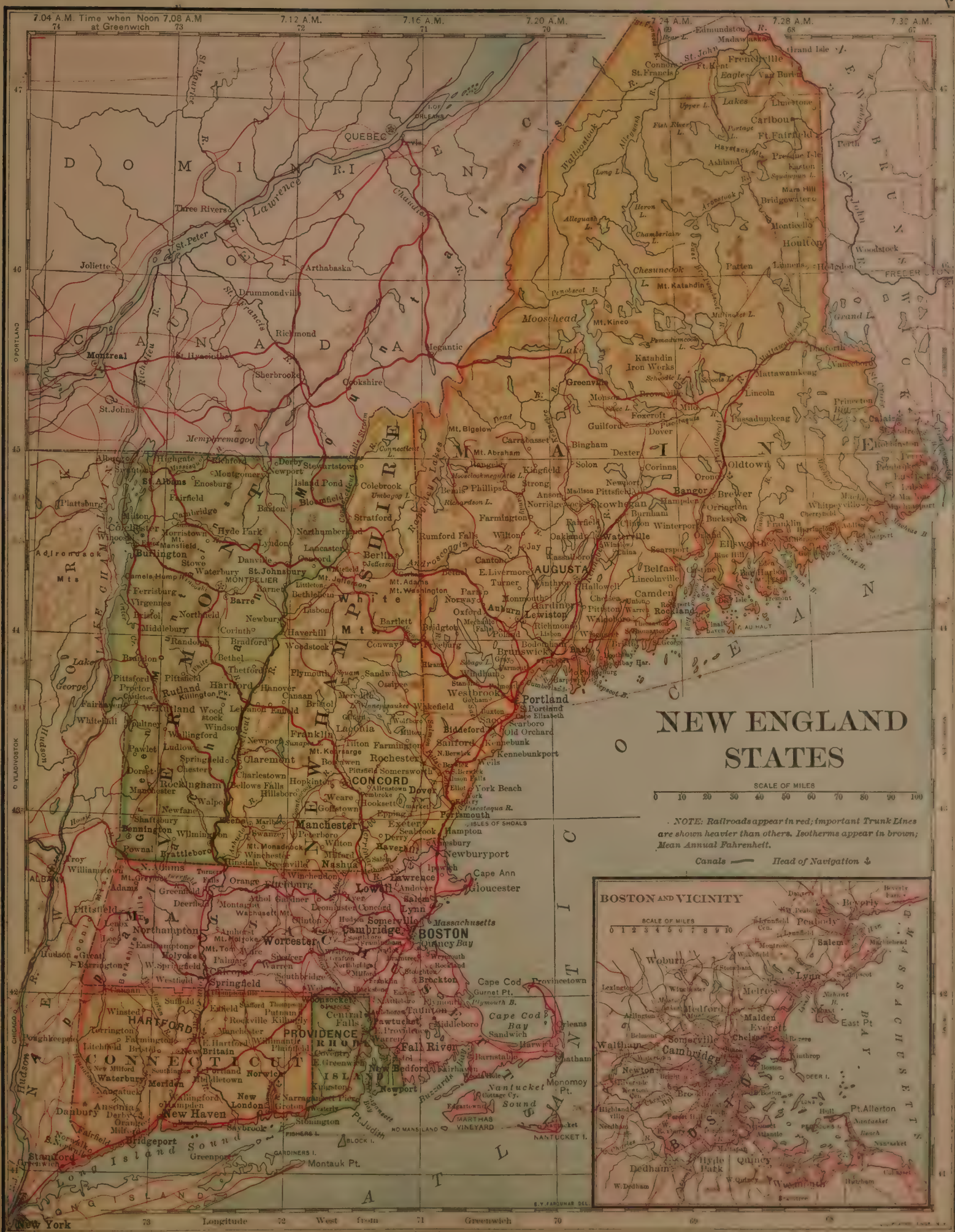
Canals — Head of Navigation —

















SOUTHERN STATES

EASTERN DIVISION

SCALE OF MILES

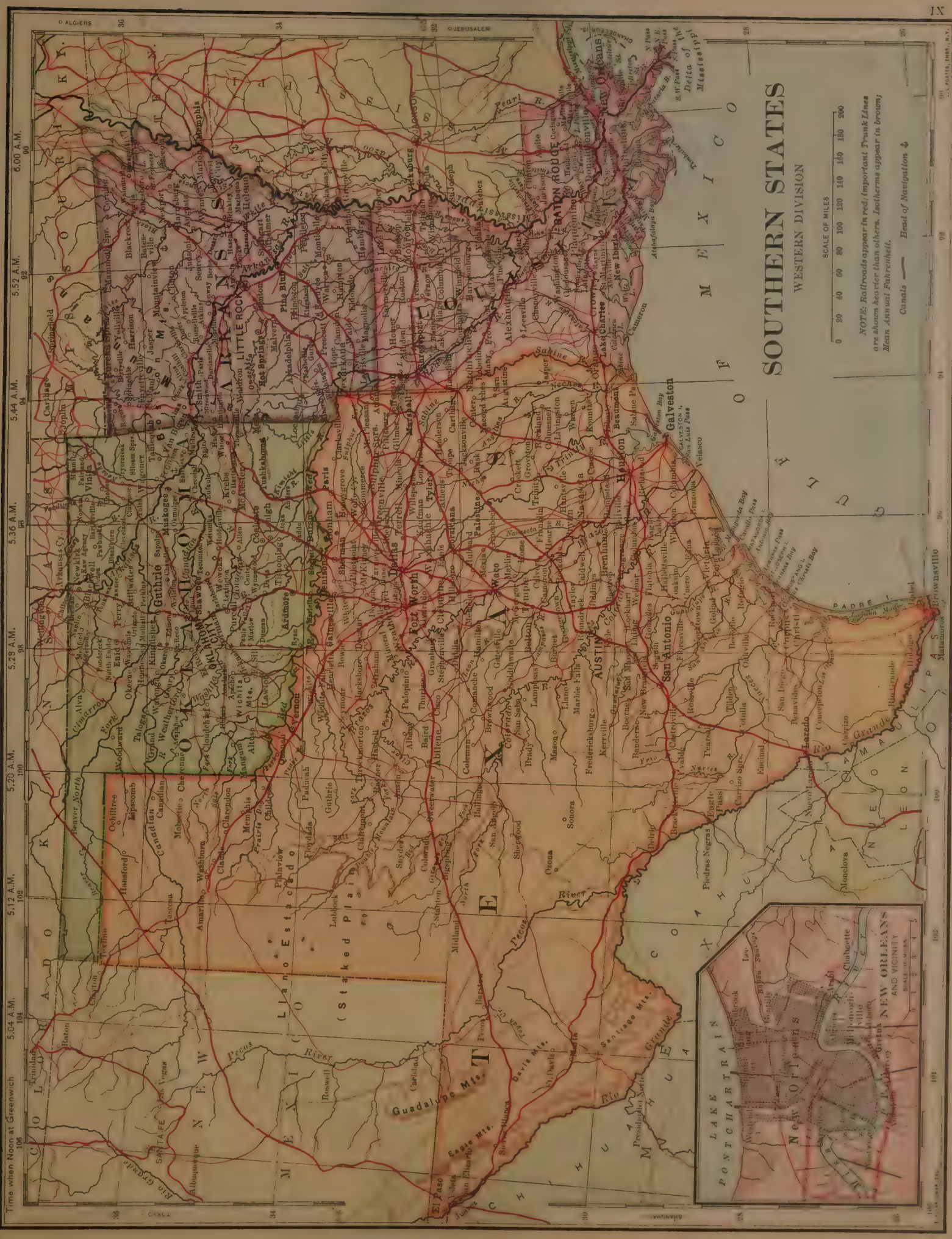
NOTE: Railroads appear in red; important trunk lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.

Canals — Head of Navigation

Longitude West 86 from

88 90

Latitude North 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90



SOUTHERN STATES

WESTERN DIVISION

SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200

NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.

Canals — Head of Navigation —

Time when Noon at Greenwich 5:04 A.M. 5:12 A.M. 5:20 A.M. 5:28 A.M. 5:36 A.M. 5:44 A.M. 5:52 A.M. 6:00 A.M.

ALGERS 36
JERUSALEM 32
MEXICO 28
NEW ORLEANS 26
PONTIAC 24
ST. LOUIS 22
ST. PAUL 20
WASH. D.C. 18
BOSTON 16
NEW YORK 14
PHILADELPHIA 12
BALTIMORE 10
CHICAGO 8
CINCINNATI 6
COLUMBUS 4
INDIANAPOLIS 2
DETROIT 0
MICHIGAN 2
OHIO 4
PENNSYLVANIA 6
MARYLAND 8
DELAWARE 10
NEW JERSEY 12
CONNECTICUT 14
MASSACHUSETTS 16
VERMONT 18
NEW HAMPSHIRE 20
RHODE ISLAND 22
MAINE 24
NEW BRUNSWICK 26
NEW JERSEY 28
PENNSYLVANIA 30
DELAWARE 32
MARYLAND 34
VIRGINIA 36
NORTH CAROLINA 38
SOUTH CAROLINA 40
MISSISSIPPI 42
LOUISIANA 44
ARKANSAS 46
MISSOURI 48
ILLINOIS 50
INDIANA 52
OHIO 54
MICHIGAN 56
MINNESOTA 58
WISCONSIN 60
IOWA 62
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NEBRASKA 200

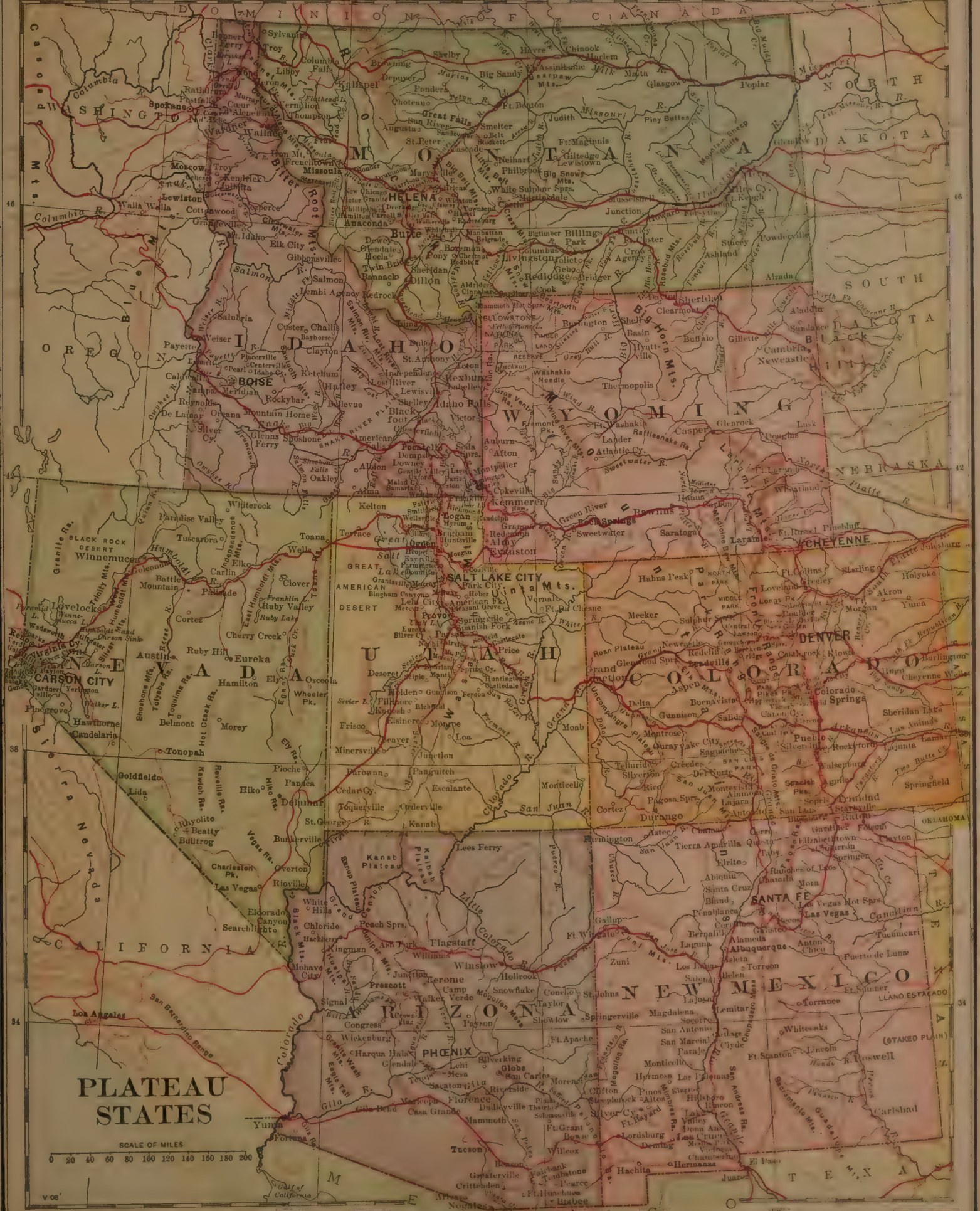
Time when Noon at Greenwich 4.08 A.M.
118

4.24 A.M.
114

4.40 A.M.
110

4.56 A.M.
106

5.12 A.M.
102



PLATEAU STATES

SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200

Time when Noon at Greenwich 5 40 A.M.

7 20 A.M.

8 00 A.M.

8 40 A.M.

9 20 A.M.

SOUTH AMERICA

SCALE OF MILES
0 100 200 300 400 500 600 700 800

NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.

Canals — Head of Navigation —





EUROPE

SCALE OF MILES

0 100 200 300 400 500

NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.

Consols — Head of Navigation

L.L. POSTS, EAST, N.Y.

Time when Noon at Greenwich 10:00 A.M. 10:40 A.M. Noon 12:40 P.M. 1:20 P.M. 2:00 P.M. 2:40 P.M. 3:20 P.M. 4:00 P.M.

Greenwich 40

from 30

CRETE

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E

East

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Longitude

West

0

Longitude

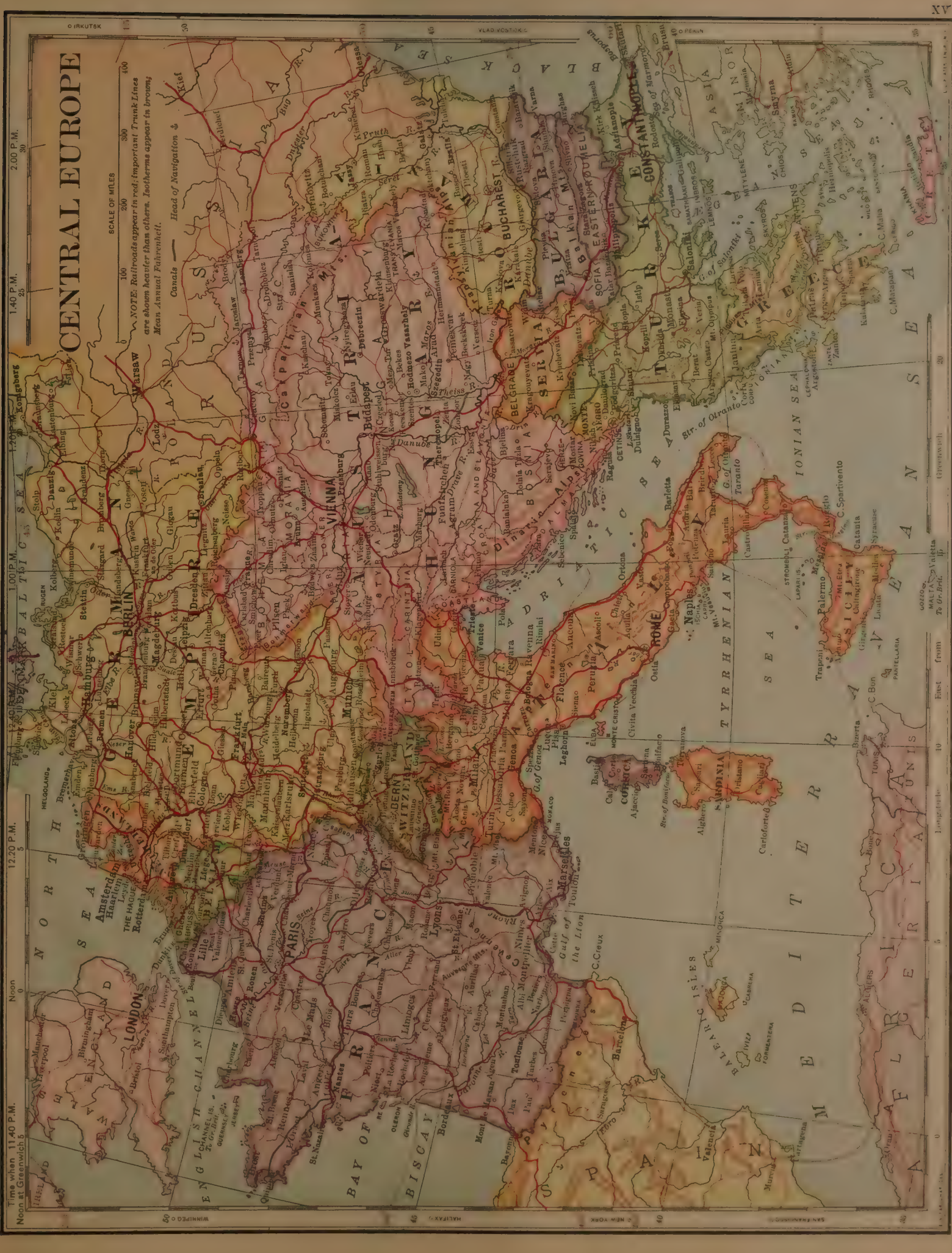
West

0

Longitude

West

0



CENTRAL EUROPE

SCALE OF MILES

NOTE: Railroads appear in red; important trunk lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.

Canals

Head of Navigation

Time when 11:40 P.M. Noon at Greenwich 5

12:20 P.M. 5

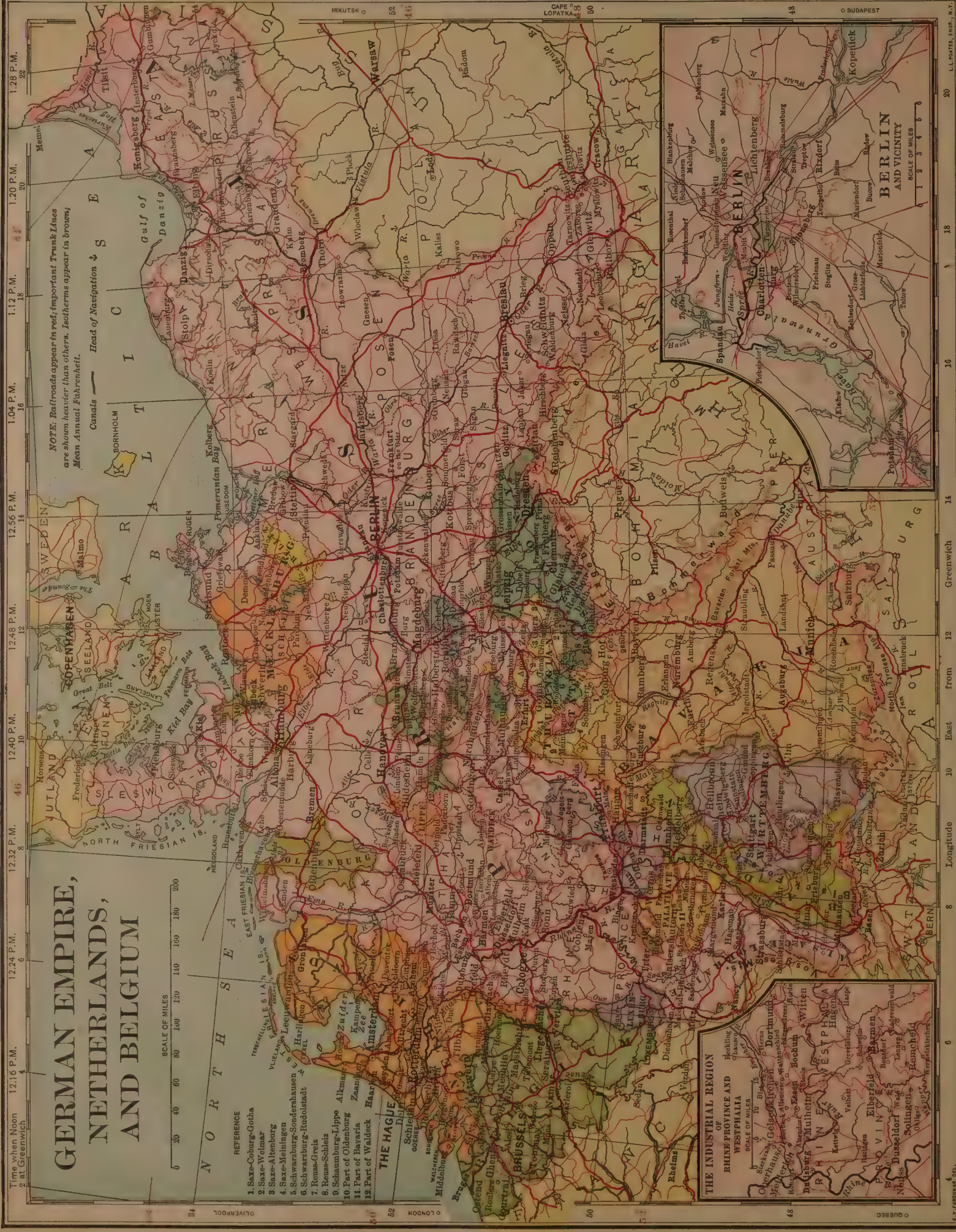
Noon 0

1:40 P.M. 25

2:00 P.M. 30









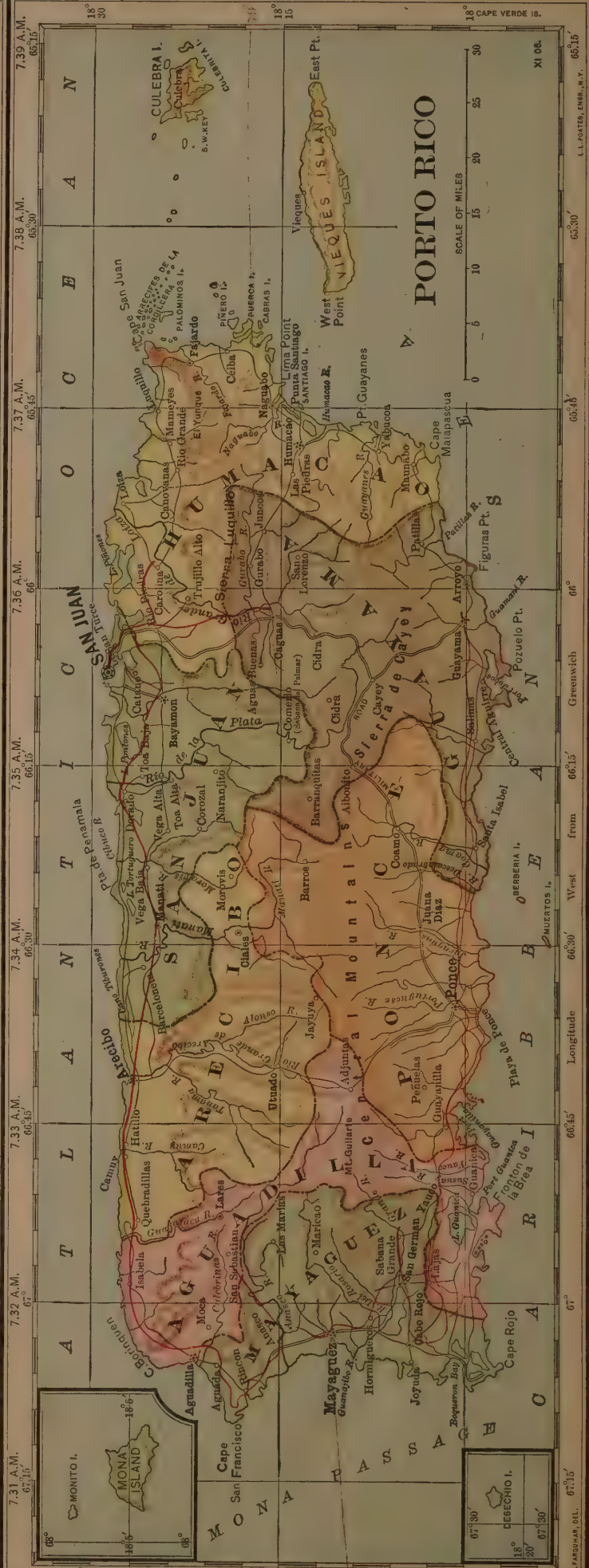




Time when Noon 6:40 P.M. at Greenwich
7:20 P.M. 8:00 P.M. 8:40 P.M. 9:20 P.M. 10:00 P.M. 10:40 P.M. 11:20 P.M. Midnight







SUPPLEMENT: INSULAR POSSESSIONS, CUBA, AND PANAMA

PORTO RICO

Physical Features. Porto Rico is the smallest of the four islands of the Greater Antilles. It is about 95 miles long and 35 miles wide, and has over twice the area of Long Island in New York. The mountains extending through the island east and west are little more than a range of hills, the highest peak of which is about half a mile high. From these hills many streams flow into the sea. The small islands of Vieques (vē-ā'kās) and Culebra (kū-lā'brá) to the east, and Mona to the west, belong to Porto Rico.

The climate is warm and mild, with little difference in temperature between summer and winter. The rainfall is ample in nearly all parts of the island. The driest month is February; the rainiest is November. The prevailing winds are the northeast trades. Tropical hurricanes are not uncommon.

People. The Indian natives were subdued and destroyed by the Spaniards who settled on the island after its discovery by Columbus in 1493. After four centuries of Spanish rule, Porto Rico was ceded to the United States in 1898. The white inhabitants, mostly of Spanish descent, now number about 700,000, and the negroes about 400,000. Most of the people are uneducated; but schools have been provided for a large part of the children. The Governor is appointed by the President of the United States, but Porto Rico is not organized as a territory.

Industries. Timber is scarce, for the forests have been extensively cleared, and the hills may be cultivated to their

very tops. Coffee, sugar cane, and tobacco are the leading products. Upland rice is cultivated on the hillsides, and much native Indian corn is grown. Fruits are produced in great abundance—especially bananas, oranges, pineapples, guavas, and cocoanuts. Some cotton is grown. Large herds of cattle are pastured on the lowlands, and horses of a small breed are also raised. Fowls are abundant.

Commerce. About 200 miles of railroad are in operation, and there are many good wagon roads. The chief exports are sugar and molasses, coffee, tobacco, fruits, and cattle.

Cities. *San Juan*, the capital, was founded by Ponce de Leon in 1511, on one of the finest harbors in the West Indies. The city is surrounded by a massive wall, and has stately public buildings. The population is about 48,000. *Ponce*

(pōn'sā), on the southern coast, is a city nearly as large.

Arecibo (ā-rā-sē'bō), on the northern coast, is an important center and shipping port of the sugar industry.



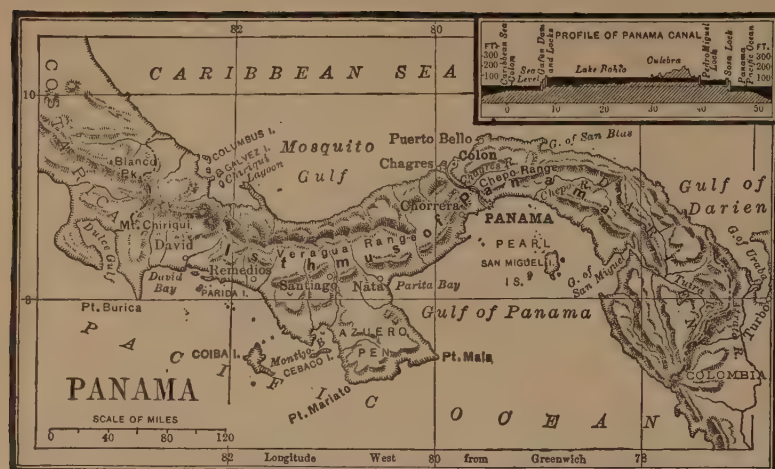
GOVERNMENT BUILDING, SAN JUAN.

REPUBLIC OF CUBA

Physical Features. Cuba has a length of 720 miles and an average breadth of 60 miles. Its area is about that of Pennsylvania. In the southeast, the mountains rise higher than the Appalachians; but the central range, as in Porto Rico, is hardly more than a series of hills. From the central mountains fertile meadows and plains slope gently down to the coast. The general course of most of the rivers is either north or south; but the two largest flow westward. Much of the coast is bordered with coral reefs and



THE CITY AND HARBOR OF HAVANA.



islands. The Isle of Pines, which belongs to Cuba, is nearly half as large as Delaware.

The climate is much like that of Porto Rico. Vegetation is luxuriant, and includes many different kinds of plants.

People. Cuba was discovered by Columbus in 1492, and settled by Spaniards under Velasquez in 1512. The native Indians were enslaved and destroyed. The severity of Spanish rule led to many rebellions, during one of which, in 1898, the United States compelled Spain to withdraw; in 1902 the republic of Cuba was proclaimed, under the protection of the United States. The population includes about 1,500,000 whites and over 600,000 blacks.

Industries. Some valuable lumber is cut, copper and iron ore are mined in the southeast, and asphalt is found in the central part of the island. But the great industry of Cuba is agriculture. The chief products are sugar cane and tobacco, for which Cuba is especially noted; but bananas, oranges, pineapples, corn, and sweet potatoes are also extensively produced. Some cattle and poultry are raised.

Inland commerce is aided by about 2500 miles of railroad, but there are few good common roads. The principal exports are sugar and molasses, tobacco, tropical fruits, and cabinet lumber.

Cities. *Havana*, with a population of about 300,000, is the capital, largest city, and chief seaport. It is picturesquely situated on a broad harbor, and has fine public buildings and parks. *Havana* is a great tobacco market, and manufactures many cigars and cigarettes. *Santiago de Cuba*, in the southeast, is the second city in size and importance. It has a population of about 50,000, and is the center of trade for the neighboring iron and copper mines. *Matan'zas* in the north and *Cienfuegos* (sē-ñ-fwā'gōs) in the south are important seaports, and *Cama-guey* (cā-mā'gwā) is the largest inland city.

REPUBLIC OF PANAMA

Physical Features. The republic of Panama is about 500 miles long, but only about 35 miles wide at its narrowest point. It is about as large as the state of Maine. It is traversed by a low mountain range, but in the west there are volcanic peaks about two miles high.

The climate is tropical, with an excessive rainfall. The northern coast is damp, hot, and unhealthful; but the highlands and most of the south coast have a more healthful climate.

Resources. Dense forests, containing valuable timber and dyewoods, cover most of the country. The soil, where cultivated, is very fertile. Gold, copper, iron, and other minerals are found.

People. For many years Panama was part of Colombia, but in 1903 it declared itself an independent republic.

The people number about 228,000, mostly of mixed Spanish, Indian, and negro origin. Many are engaged in agriculture and herding; but the chief industries are those centered about the partly constructed interoceanic canal, and in the railroad which crosses the isthmus. *Panama*, the chief city, with a population of 30,000, and *Colon* are the important seaports at the ends of both the railway and the canal.

The Panama Canal. The route of the canal crosses the isthmus at its lowest point, and is nearly 50 miles long.

The first attempt to cut a canal there was made in 1878, by a French company, which failed after spending much money and doing only a small part of the work. In 1904 the unfinished work was sold to the United States, which is now constructing the canal. The proposed canal is to have six locks, with a summit level 85 feet above the sea. The width is to be 200 feet at bottom; depth, 45 feet.



DENSE TROPICAL GROWTHS, HAWAII.

Canal Zone. By a treaty made in 1903, the republic of Panama granted to the United States the perpetual use and control of a strip of territory known as the Canal Zone. This grant extends five miles on each side of the center line of the canal route and entirely across the isthmus, but does not include the cities of Panama and Colon.

TERRITORY OF HAWAII

Physical Features. The Territory of Hawaii comprises the Hawaiian Islands, which lie in the Pacific Ocean about 2500 miles southwest of San Francisco, in about the same latitude as Cuba. Their area is less than that of New Jersey. The largest island, Hawaii, is smaller than Connecticut. Each island was originally built up of lava outflows, and several volcanoes in the island of Hawaii are



LOADING SUGAR CANE ON CARS.

still active. The greatest elevations are more than twice as high as any in the Appalachian Mountains. The surface is mountainous and much of it is very rough and uneven. The islands are fringed with coral reefs.

The climate is warm and very pleasant. The temperature is made equable by the vast surrounding ocean. The prevailing winds are from the northeast. The windward slopes receive much rain, but the leeward slope of Hawaii is rather dry.

Vegetation and Animals. The windward slopes are covered with a dense tropical growth, and the forests contain much valuable timber. Among the useful native trees and plants are the coconut, breadfruit, banana, and the wonderfully nutritive taro.

There are few kinds of native animals, besides birds. Pigs, dogs, and rats were introduced by man centuries ago. Recently imported goats and cattle have increased into wild herds.

People. Since Captain Cook discovered the islands in 1778, the natives have decreased from perhaps 300,000 to less than 40,000 in number; but the population now includes also more than 80,000 Japanese, about 25,000 Chinese, and over 40,000 whites. The natives were quickly educated and civilized by American missionaries in 1820 and later. Children of all races are now obliged to attend school. The islands were governed by native chiefs and monarchs till 1893; then the queen was deposed and a republic set up, which in 1898 was annexed to the United States, and two years later was organized as a territory.

Industries. The cultivation of sugar cane is by far the most important industry. The bulk of the sugar is shipped in its raw state to San Francisco, where it is refined. Coffee, which grows on the elevated lands, is also exported. Some rice is raised by the Chinese. The common garden vegetables, taro, and oranges, pineapples, bananas, and

many other fruits produce abundantly. There are large sheep farms, and wild cattle are killed for their hides. Many fish are caught along the coast.

Nearly all the sea-borne commerce of the territory is with the main part of the United States.

Cities. *Honolulu*, the capital, has a population of about 52,000, and is a port of call for many vessels crossing the Pacific. The harbor is more than a mile long, and admits the largest ships. The city contains substantial government buildings and ship yards, iron works, planing mills, rice mills, and ice factories. *Hilo* (*hē'lō*), with about 7000 inhabitants, has a beautiful situation on the island of Hawaii, and is next to Honolulu in importance.

THE PHILIPPINE ISLANDS

Physical Features. The Philippine Islands are about 600 miles southeast of China, in about the same latitude as Central America. Luzon and Mindanao (*mēn-dā-nā'ō*) are each larger than Indiana; together they include more than half the area of the whole group. The surface is

much broken by mountain ranges and volcanoes. Several of the islands have peaks higher than any in the Appalachians. There are many water courses, the largest rivers being the Cagayan (*cā-gā-yān'*) in Luzon and the Agusan (*ā-gu'sān*) in Mindanao.

The climate varies considerably in different parts of the archipelago. In most of the lowlands it is tropical, with three

seasons: the temperate, with an average temperature of about 78°, from November to February; the hot, from April to June, in which temperatures of 100° are occasionally reached; and the wet, from June to October, during which torrents of rain fall. Violent hurricanes, or typhoons, visit the northern islands.



HARBOR OF HONOLULU.



MAYON VOLCANO, LUZON.

The Forests are of wide extent and contain many valuable kinds of timber—cedar, teak, dyewoods, ebony, and other beautiful cabinet woods. The forests also supply various resins, rubber, gutta percha, and other gums. The cocoa-nut palm flourishes everywhere, and bamboo, rattan, mangoes, and all Malayan fruits grow in abundance.

The Wild Animals include the monkey, deer, wild cat, alligator, turtle, python, and smaller snakes, of which only one kind is poisonous. Of birds there are several hundred species, and there are numerous beautiful butterflies and destructive ants.

People. The Philippines were discovered by Magellan in 1521, and for nearly 400 years these islands were subject to Spain. After the Spanish-American war of 1898 they were ceded to the United States. For some years they were governed by appointed officers; but the natives have now been given some share in the government.

The people number about 7,650,000, mostly of Malay descent. About nine tenths of them are civilized Christians, including the Tagals (tā-gälz') of Luzon, the Visayans (vē-sä'yānz) occupying several islands south of Luzon, and other peoples. In the far south are the Moros, who are Mohammedans. There are also many small wild tribes inhabiting different islands; a few woolly-haired Negritos, descended from the original inhabitants; and over 40,000 Chinese.

Agriculture is the prevailing pursuit. Though rice is perhaps the chief crop, the entire product is used for food in the Philippines, and more is imported. Manila hemp, sugar cane, copra, and tobacco are produced and largely exported. Cacao and Indian corn (introduced from America), with bananas, vegetables, pineapple fiber, cotton, and pepper, are other products of importance.

The wild buffalo, or carabao, is domesticated, and is the beast of all work. Small horses, cattle, hogs, and poultry are also raised.

Manufacturing by machinery is not largely developed. The women weave by hand many beautiful tex-



A STREET IN MANILA.

where products are gathered for export.

Cities. *Manila*, the capital, is a city of 220,000 inhabitants, situated on a large bay of the same name. It is the main port for foreign commerce. Telegraph cables connect it with Hongkong and San Francisco. *Iloilo* (ē-lō-ē'lō) is the second city in importance, and has a large trade in sugar. *Cebu* is a well-built city and an important trade center. These cities are near the central part of the archipelago. *Laoag* (lou-äg') in the far north, and *Zamboanga* (thām-bo-än'ga) in the south, are also places of importance.



A PHILIPPINE HEMP FIELD.

islands east of the Philippines. The people are partly descendants of immigrants from the Philippines. Guam is important only as a naval and coaling station, and cable landing.

TUTUILA AND MANUA ISLANDS are the eastern portion of the Samoa group, in the south Pacific Ocean, and were ceded to the United States in 1899. The natives resemble the Hawaiian natives, and are noted for their strength, bravery, and intelligence. The excellent harbor of Pago Pago is occupied as a naval and coaling station.

The United States also owns in the Pacific a number of islets with insignificant area—among them Midway and Wake.

MIDWAY ISLAND is an atoll in the middle of the north Pacific Ocean, and was occupied by the United States in 1867. Some money has been spent in improving the harbor there; but the chief importance of Midway is as a cable landing.

WAKE ISLAND is an atoll in the north Pacific Ocean, halfway between the Philippines and the Hawaiian Islands. It has no inhabitants, and was seized by the United States in 1899.



VIEW ON PAGO PAGO HARBOR, TUTUILA.

GEOGRAPHY OF MISSOURI.

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PHYSICAL FEATURES.

Position, Extent, and Boundaries. In what part of the United States is Missouri? Is the center of the state nearer the Gulf of Mexico or the Dominion of Canada? How about its distance from the Atlantic Ocean and the Pacific Ocean? Missouri lies mainly between latitude $36^{\circ} 30'$ and $40^{\circ} 30' N.$, and between longitude $89^{\circ} 2'$ and $95^{\circ} 51' W.$ A small portion of the state in the southeast extends to latitude $36^{\circ} N.$



Scene in the Ozark Mountains.

The western boundary of Missouri was originally $94^{\circ} 36'$. In 1836 the part lying between that line and the Missouri River, now comprising six counties, was purchased by the state from the Sac and Fox Indians. The northern boundary line was settled by the supreme court in 1849. The other lines were established by Congress at the time of the admission of Missouri to the Union as a state.

With the scale of miles, find the distance across the state from north to south; from east to west. The area of Missouri is 69,420 square miles. It is about the same size as Washington, a little larger than all New England, and somewhat more than one fourth as large as Texas.

Surface. In studying the surface of Missouri, it is convenient to regard the state as comprising three distinct physical regions, known as the Northern Plain, the Ozark Plateau, and the Southeastern Plain.

The Northern Plain includes all of the state north of the Missouri, and the western portion south of that river. It is for the most part a prairie region with undulating surface diversified with hills and valleys. There are forests along the streams. The surface is an incline sloping from the highest point in the northwest toward the Missouri and Mississippi rivers. The northeastern part of the state is comparatively level, with gentle slopes; but the northwestern and western regions are considerably eroded and have a stronger relief. The aspect of the region north of the Missouri River was much affected by the ice sheets

of the glacial period. These sheets, moving down from the north, covered the surface to a considerable depth with débris consisting of silt, gravel, and boulders commonly referred to as "lost rocks."

The Ozark Plateau is a highland whose northern slope borders on the Northern Plain. It is a ridge or mountain fold of the earth's crust extending slightly north of east from Arkansas through Missouri into Illinois. The top of the fold is a plateau consisting of rounded peaks, many of which are devoid of vegetation and are called "bald knobs." The plateau is highest in Wright and Webster counties, where it reaches an elevation above 1600 feet. The highest peak of this highland has an altitude of about 1700 feet.

The slopes descend gradually from the crest of this fold, except where it is cut by the Mississippi River, and hence the river valleys are steeper and the mountain peaks more pronounced on the sides than on the top of the plateau. In the limestone rocks of these slopes are found numerous caverns, through some of which pass underground creeks or rivers, while others contain a deposit called onyx marble.

The Southeastern Plain is a lowland in the southeastern part of the state, a large portion of which is an old flood plain of the Mississippi River. Portions of this region were slightly lowered by a series of earthquakes in 1811-12. Extensive levees have been built along the Mississippi and other water courses, and large tracts of valuable land have been reclaimed.

That portion of the state north and west of a line drawn from Hannibal to Carthage is chiefly a prairie region, rich and well watered, with groves of timber skirting the water courses. Rolling, grassy plains extend also from the Ozark Plateau. In the southeastern part of the state are extensive



Landscape, Northern Missouri.



forests, and the lowlands are undulating and extremely fertile.

Drainage. All the waters of the state are led finally into the Mississippi, the greater part through the Missouri. The Missouri River has a course within the state of 436 miles, following a broad, deep, and somewhat winding channel, and bordered by broad bottoms of inexhaustible fertility. The Northern Plain north of the Missouri is traversed by streams which are straight and swift, while south of that river the streams flow more slowly through a surface less diversified. About one fifth of the Northern Plain is drained directly by the Mississippi River. The northern part of the Ozark Plateau is drained by the Osage, Gasconade, and Maramec rivers, while the waters of the southern part enter the White River in Arkansas. The rivers on the south are longer and more active than those on the north. The southeastern plain is drained by the St. Francis and the Mississippi rivers.

Soil and Climate. The soil of the northern and western parts of the state is deep, and much of it is underlain by limestone. Along the streams the alluvial plains are wide and of an exceptionally rich character. On the Ozark Plateau the soil is less productive, except on the alluvial plains which border the streams. On the southern slopes, however, the soil is deep and much of it is sandy. It is exceedingly well adapted for the growing of certain fruits. The Southeastern Plain is largely alluvial, and is the most productive part of the state. The clearing away of the forests, and the reclamation of extensive areas of swamp land, will eventually make this section one of the finest farming regions in the country. The only drawback is the danger of inundations from the Mississippi.

The location of the state of Missouri in the central part of the Mississippi basin gives it a choice climate. It is in the area of frequent atmospheric changes, bringing rain from the Gulf of Mexico, followed by cooler air from the north and west.

The average annual rainfall in the state is 39 inches. The mean yearly temperature is 54° F. The rainfall is slightly greater in the southeastern portions, while the extremes of temperature are more marked in the northwest.

PRODUCTIONS AND INDUSTRIES.

Agriculture. More people of Missouri are engaged in agriculture than in any other industry. The Northern Plain produces large quantities of corn, grass, and hay, which support the industry of stock-raising, the most extensive in the state. There are but few large ranches in Missouri, but the land is divided into farms of small and medium size, on which the farmer raises his crops to be fed to his stock or sold for shipment to the great markets of the state.

The feeding and grazing of hogs and cattle for the markets of St. Louis and Kansas City form the principal occupation of many farmers. Mules are raised in Missouri in great numbers, and stock raisers are giving much attention to the breeding of fine blooded horses and

cattle. Dairying holds a high rank among agricultural industries, and sheep and poultry raising yield substantial profits.

Corn is the great staple crop, and is raised extensively in all parts of the state. Wheat of an excellent quality is grown in large quantities, especially in counties bordering on the Missouri and Mississippi rivers. Oats hold third place among cereal crops.

Rye, Kafir corn, milo maize, barley, spelt, and buckwheat are grown in smaller quantities. Potatoes are a very important crop, and cotton is raised to a considerable extent, chiefly in the southeastern counties. Tobacco of fine quality is grown on the alluvial plains of all the principal streams.

Great attention is given to the cultivation of grasses, and large harvests of timothy, clover, Hungarian grass, alfalfa, and other tame and wild grasses are gathered each year. The hay and forage crops have a total annual value which is second only to that of corn.



Orchard, Southwestern Missouri.

Minor crops include sweet potatoes, peas, and a variety of other vegetables, besides flaxseed and broom corn. Ginseng, peanuts, sorghum, and hemp are some of the products of lesser importance. The soil and climate of the southeastern part of the state is well adapted for watermelons, of which thousands of carloads are annually shipped.

Fruits are raised successfully in all parts of the state. The northwestern part has hitherto produced the largest quantity of apples. Experiments have shown that the soil and climate of the southern slopes of the Ozark Plateau make it not only the best fruit area of this state, but one of the best in the world.

Manufacturing. Although a much smaller number of of the inhabitants are engaged in manufacturing than in agricultural pursuits, the value each year of the manufactured products greatly exceeds that of the farm products. In this branch of industry Missouri ranks high among the states of the Union.

Meat-packing, and the manufacture of boots and shoes and flour, are the leading industries. The other chief manufactures are tobacco, printed matter, malt liquors, lumber products, clothing, machinery, railroad cars, carriages and wagons, medicines, and a great variety of other articles.



Scene on the Mississippi River, below St. Louis.

Lumbering. The valuable timber of the southern and southeastern parts of the state consists of walnut, elm, ash, and yellow pine. There are also sycamores, cottonwoods, gum trees, live oaks, pecans, and persimmons. Lumbering is one of the important industries of those regions, and in many places where transportation is convenient it is largely carried on. Sawmills are numerous, and millions of feet of lumber are manufactured annually.

Mining. About one third of the state is underlain with bituminous coal, the area comprising the greater part of the region northwest of an irregular line drawn from Clark county to Jasper county, and embracing more than 20,000 square miles. The workable coal beds usually vary in thickness from one to four feet, but in certain localities are much thicker. The beds slope downward to the west, and the coal is found on the surface in the eastern border of this area, but in the northwest it is mined at great depths. Coal-mining is an important industry of the state, and engages thousands of men. The large shipping mines are in Bates, Lafayette, and Macon counties.

Joplin is a great zinc-mining center. Missouri ranks first among the states in the production of zinc ore. Lead was found in southeastern Missouri more than 250 years ago, and within the last half-century many lead mines have been opened in the central and southwestern districts of the state. The principal mines are in St. Francois and Madison counties in the southeast and Jasper and Newton counties in the Joplin district. Joplin and Carthage are local markets, while St. Louis is the distributing point for the East and for the foreign trade.

The plateau country is rich in iron ore. Large mines exist also in the region of Pilot Knob and Iron Mountain, in the southeast. From the Iron Mountain field alone millions of tons of ore have been produced.



Stone Quarry, Western Missouri.



Zinc Ore Concentrator, near St. Louis.

Other useful minerals, such as silver, nickel, and cobalt, are found in small quantities in the southeast.

Tripoli is found in many localities in the southern portions of the state, but the finest quality is found in Newton county. It is used extensively in the manufacture of water filters and other useful articles. In the Ozark Mountains are valuable quarries of onyx.

There are several varieties of valuable building stone in the state which have attained a considerable reputation. Among them are the granites of the southeast and the limestone and sandstone of the west.

Animals. Most of the wild animals once so numerous in this region have disappeared. Among the wooded hills in remote districts elk and deer are still occasionally found, and now and then a bear or a wildcat is seen.

The birds are of many varieties including pigeons, wild turkeys, quails, wild ducks and geese, herons and cranes, and great numbers of singing birds. Fishes abound in all the streams. The best known varieties are black bass, perch, pike, catfish, buffalo fish, suckers and sunfish.

Commerce and Transportation. The foreign and domestic commerce of the state is very important. The Mississippi River is much used as a commercial highway, and likewise, to some extent, is the Missouri. The Osage River is navigable to Tuscumbia, 60 miles, and is a valuable trade route for lumber and other heavy freights. The Gasconade and Lamine are also navigable for short distances. The northern and western parts of the state are well supplied with railroads. Some parts of southern Missouri are not so generally reached by rail, but the mileage is increasing every year. At present there are over 8000 miles of railroad in the state.



Strawberry Field, Southern Missouri.

HISTORY.

The region now composing Missouri was first discovered by De Soto, who, on his inland march of exploration, reached the Mississippi River in 1541. The next explorers were the French, who made various attempts to colonize the rich territory. But it was not until 1755 that they finally established a successful settlement at Ste. Genevieve on the Mississippi, and opened lead mines near by. Following this were numerous settlements by the French in the eastern part of the state. The city of St. Louis was founded in 1764.

In 1803, by the terms of a treaty with France, the vast tract of land known as the Louisiana Purchase, of which Missouri was a part, became a possession of the United States.

Missouri territory was organized in 1812. In 1818 Missouri applied to Congress for admission to the Union as a state, and after a bitter struggle over slavery was admitted in 1821. The act by which it was admitted contained a clause called the Missouri Compromise, which allowed slavery in Missouri, but prohibited it forever in all the territory of the United States west of Missouri and north of its southern boundary, or the parallel of 36° 30'.

Although Missouri was virtually a southern state, she yet remained in the Union during the civil war. Not being in arms against the United States, Missouri was not included in President Lincoln's Emancipation Proclamation, issued January 1, 1863, but she abolished slavery by a state convention in 1865.

The first constitution of the state was adopted in 1821, and remained in force until it was superseded in 1865 by the so-called Drake Constitution. The present constitution was adopted in 1875.

The population of Missouri, according to the census of 1910, was 3,293,335.

Government. The legislative power is vested in the general assembly, which consists of two departments, a senate and a house of representatives.

The house of representatives has 142 members, elected for 2 years by the qualified voters of the counties. Each county has at least one representative, and if the population is sufficient it has two or more accordingly.

The senate consists of 34 members, elected for 4 years by the qualified voters of the senatorial districts. These districts are laid out by the legislature every 10 years, after the census is taken. The legislature holds biennial sessions, beginning in January in odd years.

The executive department comprises a governor, lieu-



Interior of Packing House, Kansas City.

tenant-governor, secretary of state, state auditor, state treasurer, attorney-general, superintendent of public schools, elected by the people for a term of 4 years, and 3 railroad commissioners, elected for 6 years. Other officers are appointed directly by the governor or by boards appointed by him. Among these are a superintendent of insurance, excise commissioners, labor commissioner, and state geologist.

The judicial department includes a supreme court, courts of appeals located at St. Louis and Kansas City, and circuit courts, criminal courts, probate courts, and county courts. Besides these, there are justice courts, and other inferior courts.

The county is an important organization for the administration of the law. There are 115 counties, one of which is the city of St. Louis. The judicial affairs of a county are presided over by the county court, whose judges are elected by the people. Other county officers are a sheriff, recorder, clerk of the county court, collector, treasurer, judge of probate, and school commissioner.

Missouri has 2 senators, and 16 representatives in Congress, and 18 votes in the electoral college.

Education. The educational system of the state includes all grades of schools under the general control of the state superintendent of public schools. The permanent school fund exceeds \$14,000,000, and the annual public outlay for the support of schools is about \$14,000,000.

The counties are divided into school districts of con-

venient size, so that every child between the ages of 6 and 20 may have the benefit of school free of tuition. The compulsory attendance law applies to all children between 8 and 14 years of age, and to all unemployed between 14 and 16. The cities have school systems which are usually carefully graded and under the control of a principal or superintendent. Separate schools are maintained for colored children. The schools are supported by direct tax and by the public school money, which consists of a distribution per capita of one third of the taxes collected by the state and the interest on the school fund.

In addition to the lower grades, all cities support high schools with a course of study extending through from 2 to 4 years. The law provides also for rural high schools, and many localities maintain them.

Normal schools for the education of teachers are located at Kirksville, Warrensburg, Cape Girardeau, Springfield, and Maryville. Lincoln Institute at Jefferson City is a state normal and industrial school for the education of colored teachers. The State University, located at Columbia, and including the School of Mines at Rolla, is the head of the educational system with a total enrollment of about 3000 students.



Court House, St. Louis

Other institutions supported by the state are the Missouri Training School for Boys at Boonville; the Industrial Home for Girls at Chillicothe; the Missouri School for the Deaf and Dumb at Fulton; four hospitals for the insane, No. 1 at Fulton, No. 2 at St. Joseph, No. 3 at Nevada, and No. 4 at Farmington; the Missouri School for the Feeble Minded at Marshall; and the Missouri School for the Blind at St. Louis. The State Penitentiary is located at Jefferson City. The Missouri College Union consists of ten high-grade universities and colleges. There are also many excellent private and denominational schools and colleges.



Stock Yards, Kansas City.



View in the Residential Section, St. Louis.

CITIES AND TOWNS.

St. Louis, the largest city in the state, is situated on the Mississippi River about 20 miles below the mouth of the Missouri. It is the principal city of the Mississippi basin. Its location in the heart of the great agricultural region, and its unrivaled facilities for transportation, indicate that it will ever be one of the great cities of America.

The site of St. Louis is beautiful, and its park system is large and well arranged. The business portion of the city contains many buildings of great architectural beauty. The streets are well paved, and the street railways, which traverse the city in all directions, form the most complete system in this country.

In manufacturing St. Louis is the fourth city in the United States. The articles of manufacture cover a wide range, and are chiefly from raw materials obtained in the surrounding region. In the manufacture of tobacco, malt liquors, boots, shoes, and packed meat it holds a high rank. Among its other manufactures are printed matter, clothing, castings, machinery, bags, paints, stoves, vehicles, and flour.

Tobacco Factory,
St. Louis.

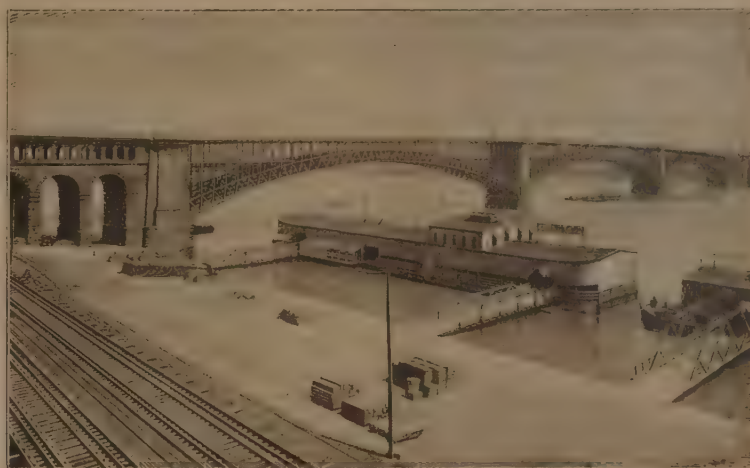
As a distributing point St. Louis is of great importance. By means of the Mississippi and its tributaries it has communication with the great cereal-producing portion of our land, and its immense railroad facilities give it connection with all the leading cities of the United States and with the seacoast. The Union railway station is one of the largest in the country. The Eads bridge, connecting this city with East St. Louis, Illinois, is one of the most noted structures of its kind. The commerce of the city is extended over much of the east-

ern portion of the United States, and over all the western and south-western parts to the Pacific coast. Its foreign commerce is great and rapidly increasing, especially with Mexico and the countries of South America.

In education St. Louis enjoys superior advantages. Its public school system, from the kindergarten to the high school, is well organized and liberally supported; and here is the seat of Washington and St. Louis universities, and of many other institutions of high order. The Free Public Library, the Mercantile Library, and others add greatly to the intellectual resources of the city, which in culture and social development is one of the foremost in the Union.

The population, according to the census of 1900, was 575,238, and in 1910 the number of inhabitants was 687,029.

Kansas City, next in size, is situated at the western border of the state on the Missouri River, at the mouth of the Kansas. It is continuous with Kansas City, Kansas, the middle of a street forming the dividing line between



The Eads Bridge across the Mississippi, St. Louis.

the two municipalities. The excellent agricultural and grazing district surrounding it, and its railroad connection with the great western country and with Mexico, make it a commercial center of considerable importance.

The city is well located, and has some fine business buildings and many handsome residences.

The manufactures are thriving and rapidly increasing. There are large flour mills, breweries, clothing factories, foundries, and machine and car shops.

As a distributing point to the West and South, Kansas City ranks next to St. Louis. Its railroad advantages are extraordinary, and its commerce is rapidly developing. It is an important market for grain, and the principal cattle and hog market west of Chicago. The public schools are the pride of the city, and are equal to any in our country.

Kansas City is but little more than half a century old, and has had a phenomenal growth. Its present population is about 250,000.

St. Joseph, the county seat of Buchanan county, has a beautiful site on a bend of the Missouri River. This location, together with its splendid railroad facilities, gives it superior advantages as a distributing point to the West and Northwest. It is an old trading point, and has now



Interior of Flour Mill, St. Louis.

a large wholesale trade and many manufactories. Besides meat packing, the chief manufactures are clothing, flour, saddlery and harness, butter, confectionery, malt liquors, boots and shoes, brick and tile, and machinery. The public schools are liberally supported by the city.

Springfield, the metropolis of southwest Missouri, is the county seat of Greene county. The city is located on the Ozark Plateau in the center of one of the finest agricultural and fruit-producing sections of the state. It is a railroad center and does a large wholesale business with towns south and west. There are considerable manufactures of flour, carriages, and wagons, and other products, and a large trade in fruits of all kinds. Springfield supports excellent public schools. It is the seat of Drury College.

Joplin, in Jasper county, is located in the center of one of the greatest lead and zinc regions of the United States. The manufacture of white lead and the smelting of zinc and lead are chief among the numerous and varied industries of the city. The public schools are efficient and well supported.

Hannibal is located in Marion county, on the Mississippi. It is an important market for lumber obtained from the pine forests of the north, whence it is rafted down the river. Among its manufactories are flour mills, foundries, car shops,



Stove Foundry, St. Louis.

Jefferson City is the capital of the state, and county seat of Cole county. It is situated on the south side of the Missouri. The capitol building, the governor's mansion, and the penitentiary stand on a high cliff overlooking the river. The city has a variety of manufactures.

Webb City, in Jasper county, is a prosperous city in the heart of the mining region of southwest Missouri. It is chiefly engaged in the mining and smelting of lead and zinc.

Moberly, in Randolph county, is a great inland railroad city. It has large car shops, carriage and tobacco factories, and flour mills, and it also carries on a large general trade.

Independence, the county seat of Jackson county, is in one of the richest agricultural sections of the state. Its manufactures include machinery, flour, and woolen goods, and it has excellent educational advantages.

Columbia, the county seat of Boone county, has, besides the State University, several other educational institutions. While its chief interests are educational, it has many advantages as a place of residence and as a manufacturing city.

Carthage, the county seat of Jasper county, has many elegant residences. It has lead and zinc mines and limestone quarries. Flour, woolen goods, bed springs, carriages, plows, and pottery are manufactured here, and fruit is shipped extensively.

St. Charles is the county seat of St. Charles county. It is essentially a manufacturing city, and has car works, breweries, flour mills, brick-yards, stone quarries, and cobpipe and furniture factories.

Cape Girardeau is one of the best located and most healthful cities of the state. The chief manufactures are flour, beer, bricks, lime, and paint. The State Normal School of the Third District is located here.

Wellston, a suburb of St. Louis, has important manufactures of lumber, and brick and tile.

Nevada, the county seat of Vernon county, is a thriving railroad center. The city has coal mines, zinc, smelting works, and flouring mills.

Webster Groves, St. Louis county, is a suburban city. It is closely connected with St. Louis by both steam and electric lines.

Poplar Bluff, on the Black River, is the county seat of Butler county. Its chief manufactures are lumber, brick, and tiles.

Kirksville, the county seat of Adair county, is located in an agricultural and coal-mining region. The pride of the city is the State Normal School of the First District, and it has also the American School of Osteopathy.



State Capitol, Jefferson City.

lime and cement works, and soap, tobacco, and shoe factories. Hannibal has a well-organized system of public schools.

Sedalia, the county seat of Pettis county, is one of the most flourishing cities of central Missouri. It is an important railroad center and a good shipping point. Some wholesale business is done here. It is noted for its fine buildings and for its school facilities. Here are railroad repair shops, foundries, packing houses, breweries, woolen mills, and various other manufactories.



High School, St. Joseph.

Chillicothe, the county seat of Livingston county, is located in a rich prairie region. It has excellent railroad facilities and is a good shipping point. Its various manufactures include brooms, flour, and woodenware.

Mexico, a flourishing city, the county seat of Audrain county, is a railroad junction and an important business center. Its manufactures include flour, and building and fire brick. It is the seat of Hardin College.

Brookfield, the largest city of Linn county, is surrounded by rich farming lands and productive coal mines. It is a railroad center with machine shops and iron works.

Trenton, a thriving city on Grand River, is the county seat of Grundy county. Fine coal is extensively mined here. Here are quarries, canneries, cigar factories, and brick works, besides railroad shops which give employment to many persons.

Lexington, the county seat of Lafayette county, has a beautiful situation on the bluffs overlooking the Missouri. It is a good shipping point for coal, lumber, grain, flour, brick, fruit, and live stock.

Fulton, the county seat of Callaway county, is an educational center. Besides the state institutions located here, there are excellent schools, public and private. It is the seat of Westminster College. The city has a good trade in grain, clay products, coal, tobacco, and live stock.

Flat River, in St. Francis county, has important interests in lead mining and smelting.

Clinton, the county seat of Henry county, is an active, growing city in a rich agricultural region. It is an important milling center and carries on a large trade in flour and grain.

Maplewood, in St. Louis county, is a suburban city lying to the west of St. Louis. Lumber and steam heaters are among its manufactures.



Interior of Shoe Factory, St. Louis.

Aurora, a growing city in Lawrence county, owes its prosperity to its location in the lead and zinc region. The chief manufactures are foundries, machine shops, and flouring mills.

Other important places, with brief mention of their leading interests, are **Marceline**, Linn county; coal, limestone, fire and brick clay. **Excelsior Springs**, Clay county; health and summer resort. **Washington**, Franklin county; flour, bricks, musical instruments, boxes and corn-cob pipes; agricultural center. **Neosho**, county seat of Newton county; plows, flour, and woolen goods; Government fish hatchery; mineral springs. **Caruthersville**, county seat of Pemiscot county; cotton gins, oil mill, lumber mills, and handle factory. **Macon**, county seat of Macon county; agriculture, coal mining, and lumbering; carriages and wagons, agricultural implements. **Carrollton**, county seat of Carroll county; shipping port for grain and live stock; flour, wagons, woolens, and agricultural implements. **Saxton**, Buchanan county; agricultural interests. **Slater**, Saline county; grain and live stock; flour milling. **Charleston**, county seat of Mississippi county; agricultural and lumbering center; headings and flour. **Kennett**, county seat of Dunklin county; machinery, spokes, flour, and cottonseed oil. **Cameron**, Clinton county; flour, carriages, wagons, and dairy products. **Liberty**, county seat of Clay county; flour and farm implements; shipping point for grain and live stock; medicinal springs. **West Plain**, county seat of Howell county; flour, lumber, zinc, and iron ores; grain, fruit, and live stock. **Butler**, county seat of Bates county; coal, flour, brick and tile, lime; grain and live stock. **Fredericktown**, county seat of Madison county; lumber, flour, and lead; granite and marble quarries; iron and brass foundry.



Transportation, Railroad Yards and Union Station, St. Louis.

Marshall, the county seat of Saline county, is a progressive business city. Missouri Valley College is located here. Marshall is an important mule, flour, and grain market.

Maryville is the county seat of Nodaway county. Grain, live stock, and fruit are shipped in great quantities.

De Soto, the largest city of Jefferson county, has car works and many other manufactories, and is a shipping point for grain, lead, and zinc.

Warrensburg, the county seat of Johnson county, is known all over the state on account of its nearness to the famous summer resort of Potosi. It is the seat of the State Normal School of the Second District. Here are quarries that produce large quantities of sandstone.



Transportation, Mississippi River Steamers, St. Louis.

POPULATION OF THE COUNTIES OF MISSOURI, 1910.

Adair	22,700	Clay	20,302	Iron	8,563	Montgomery	15,604	St. Clair	16,412
Andrew	15,282	Clinton	15,297	Jackson	283,522	Morgan	12,863	St. Francois	35,738
Atchison	13,604	Cole	21,957	Jasper	89,673	New Madrid	19,488	St. Louis	82,417
Audrain	21,687	Cooper	20,311	Jefferson	27,878	Newton	27,136	Ste. Genevieve	10,607
Barry	23,869	Crawford	13,576	Johnson	26,297	Nodaway	28,833	Saline	29,448
Barton	16,747	Dade	15,613	Knox	12,403	Oregon	14,681	Schuyler	9,062
Bates	25,869	Dallas	13,181	Laclede	17,363	Osage	14,283	Scotland	11,869
Benton	14,881	Daviess	17,605	Lafayette	30,154	Ozark	11,926	Scott	22,372
Bollinger	14,576	Dekalb	12,531	Lawrence	26,583	Pemiscot	19,559	Shannon	11,443
Boone	30,533	Dent	13,245	Lewis	15,514	Perry	14,898	Shelby	14,864
Buchanan	93,020	Douglas	16,664	Lincoln	17,033	Pettis	33,913	Stoddard	27,807
Butler	20,624	Dunklin	30,328	Linn	23,253	Phelps	15,796	Stone	11,559
Caldwell	14,605	Franklin	29,830	Livingston	19,453	Pike	22,556	Sullivan	18,598
Callaway	24,400	Gasconade	12,847	McDonald	13,539	Platte	14,429	Taney	9,134
Camden	11,582	Gentry	16,820	Macon	30,868	Polk	21,561	Texas	21,458
Cape Girardeau	27,621	Greene	63,831	Madison	11,273	Pulaski	11,438	Vernon	28,827
Carroll	23,098	Grundy	16,744	Maries	10,088	Putnam	14,308	Warren	9,123
Carter	5,504	Harrison	20,466	Marion	30,572	Ralls	12,913	Washington	13,378
Cass	22,973	Henry	27,242	Mercer	12,335	Randolph	26,182	Wayne	15,181
Cedar	16,080	Hickory	8,741	Miller	16,717	Ray	21,451	Webster	17,377
Chariton	23,503	Holt	14,539	Mississippi	14,557	Reynolds	9,592	Worth	8,007
Christian	15,832	Howard	15,653	Moniteau	14,375	Ripley	13,099	Wright	18,315
Clark	12,811	Howell	21,065	Monroe	18,304	St. Charles	24,695	The State	3,293,335

POPULATION OF THE PRINCIPAL CITIES, TOWNS, AND VILLAGES IN MISSOURI, 1910.

Albany	1,922	Deepwater	1,398	Jackson	2,105	Morehouse	1,636	St. Louis	687,029
Appleton City	1,018	Dexter	2,322	Jefferson	11,850	Mound	1,575	Ste. Genevieve	1,967
Ash Grove	1,075	Doniphan	1,225	Joplin	32,073	Mount Vernon	1,161	Salem	1,796
Aurora	4,148	Edina	1,562	Kahoka	1,758	Mountain Grove	1,722	Salisbury	1,834
Bethany	1,931	Edna	1,209	Kansas City	248,381	Neosho	3,661	Sarcoxié	1,311
Bevier	1,900	Eldon	1,999	Kennett	3,033	Nevada	7,176	Savannah	1,583
Bloomfield	1,147	Eldorado Springs	2,503	Kirkville	6,347	New Madrid	1,882	Sedalia	17,822
Bolivar	1,975	Elsberry	1,018	Kirkwood	4,171	Norborne	1,241	Senath	1,029
Boonville	4,252	Elvins	2,071	La Belle	1,017	Novinger	1,711	Seneca	981
Bowling Green	1,585	Excelsior Springs	3,900	La Grange	1,360	Odessa	1,531	Shelbina	2,174
Braymer	1,027	Farmington	2,613	La Plata	1,605	Oran	1,023	Sikeston	3,327
Breckenridge	1,025	Fayette	2,586	Lamar	2,316	Oregon	1,002	Slater	3,238
Brookfield	5,749	Ferguson	1,658	Lathrop	1,038	Oronogo	1,912	Springfield	35,201
Brunswick	1,606	Festus	2,556	Lebanon	2,430	Osceola	1,114	Stanberry	2,121
Butler	2,894	Flat River	5,112	Lees Summit	1,455	Pacific	1,418	Sweet Springs	1,122
California	2,154	Fredericktown	2,632	Lexington	5,242	Palmyra	2,168	Tarkio	1,966
Cameron	2,980	Fulton	5,228	Liberty	2,980	Paris	1,474	Thayer	1,613
Campbell	1,781	Gallatin	1,825	Louisiana	4,454	Pattonsburg	1,044	Tipton	1,273
Canton	2,218	Glasgow	1,507	Macon	3,584	Perryville	1,708	Trenton	5,656
Cape Girardeau	8,475	Granby	2,442	Malden	2,116	Piedmont	1,154	Troy	1,120
Carl Junction	1,115	Grant City	1,207	Maplewood	4,976	Pierce City	2,043	Unionville	2,000
Carrollton	3,452	Greenfield	1,434	Marceline	3,920	Plattsburg	1,650	University	2,417
Carterville	4,539	Hamilton	1,761	Marionville	1,272	Pleasant Hill	2,065	Vandalia	1,595
Carthage	9,483	Hannibal	18,341	Marshall	4,869	Poplar Bluff	6,916	Versailles	1,598
Caruthersville	3,655	Harrisonville	1,947	Marshfield	1,193	Portageville	987	Warrensburg	4,689
Centralia	2,116	Hayti	1,057	Maryville	4,762	Princeton	1,385	Washington	3,670
Chaffee	2,082	Hermann	1,592	Maysville	1,051	Purcell	994	Webb	11,817
Charleston	3,144	Hibbard	1,243	Memphis	1,984	Rich Hill	2,755	Webster Groves	7,080
Chillicothe	6,265	Higbee	1,215	Mexico	5,939	Richmond	3,664	Wellston	7,312
Clarence	1,322	Higginsville	2,628	Milan	2,191	Rockport	1,053	Wellsville	1,194
Clinton	4,992	Holden	2,007	Moberly	10,923	Rolla	2,261	West Plains	2,914
Columbia	9,662	Huntsville	2,247	Monette	4,177	St. Charles	9,437	Weston	1,019
Crane	1,002	Illmo	976	Monroe	1,949	St. James	1,100	Willow Springs	1,401
De Soto	4,721	Independence	9,859	Montgomery	1,789	St. Joseph	77,403	Windsor	2,241

GEOGRAPHY OF IOWA.

BY GEORGE CHANDLER,
Superintendent of Schools, Osage, Iowa.

PHYSICAL FEATURES.

Position, Extent, and Outline. In what part of the United States is Iowa? In what part of the Mississippi valley is it? What parallel of latitude forms its northern boundary line? What parallel forms the greater part of its southern boundary line? Describe its eastern boundary; its western. Describe the triangular projection in the southeast corner.

What is the general form of the state? With the scale of miles, find its approximate length; its approximate width. The area of Iowa is 56,147 square miles. It is nearly the same size as Wisconsin (56,066), and is but little smaller than England and Wales taken together (58,307).

Surface. The surface of Iowa is a gently undulating prairie, that of about three fourths of the state sloping in a southeasterly direction. The average elevation is 1100 feet. The southeast corner of the state is about 500 feet, the southwest corner a little over 900 feet, the northwest corner not far from 1400 feet, and the northeast corner between 600 and 700 feet above the level of the sea. The highest point in the state, about 1700 feet, is near Spirit Lake, in Dickinson county. Along the largest rivers are valleys from one to ten miles wide, bordered by irregular lines of bluffs above which stretch the vast undulating table-lands so characteristic of the state. In the northern part the plains are broken by occasional hills or mounds which rise above the general surface and give an agreeable diversity to the landscape.

Drainage. Name the largest tributaries of the Mississippi in Iowa. Name five tributaries of the Missouri. Beginning in Dickinson county, trace the divide which separates the streams flowing into the Mississippi from those flowing into the Missouri. In what direction do most of the streams of Iowa flow? What rivers enter the state from Minnesota?

The Des Moines is the largest river in Iowa. It flows through the central part of the state for a distance of more than 300 miles. Many of the streams furnish good water power for milling and manufacturing purposes, but none of the interior rivers of the state are navigable.

Northwestern Iowa is an extension of the celebrated lake region of Minnesota. Spirit Lake, near the northern boundary, is 14 miles in circumference. East and West Okoboji lakes are beautiful sheets of water united by a narrow strait. Clear Lake and Storm Lake are in the open prairie, and each covers an area of several hundred acres. All these lakes are noted summer resorts, and are

visited annually by large numbers of tourists and pleasure seekers. The lakes are well stocked with fish.

Wall Lake, in Sac county, and the Twin Lakes, in Calhoun county, besides several smaller lakes, are partially surrounded by walls of rock which look as if they had been laid by the hand of man, but which in reality are the work of nature. Many other small lakes, noted for their beauty and the crystalline clearness of their waters are scattered through the north-western part of the state. They are of glacial origin, having been formed by the great ice sheet which once extended over this entire region.

Climate and Soil. Iowa has a cool temperate climate. There are wide ranges of temperature, from the excessive heat of summer to the extreme cold of winter. The thermometer occasionally indicates a temperature of 100° in July and August, and in the dead of winter 40° below zero is sometimes



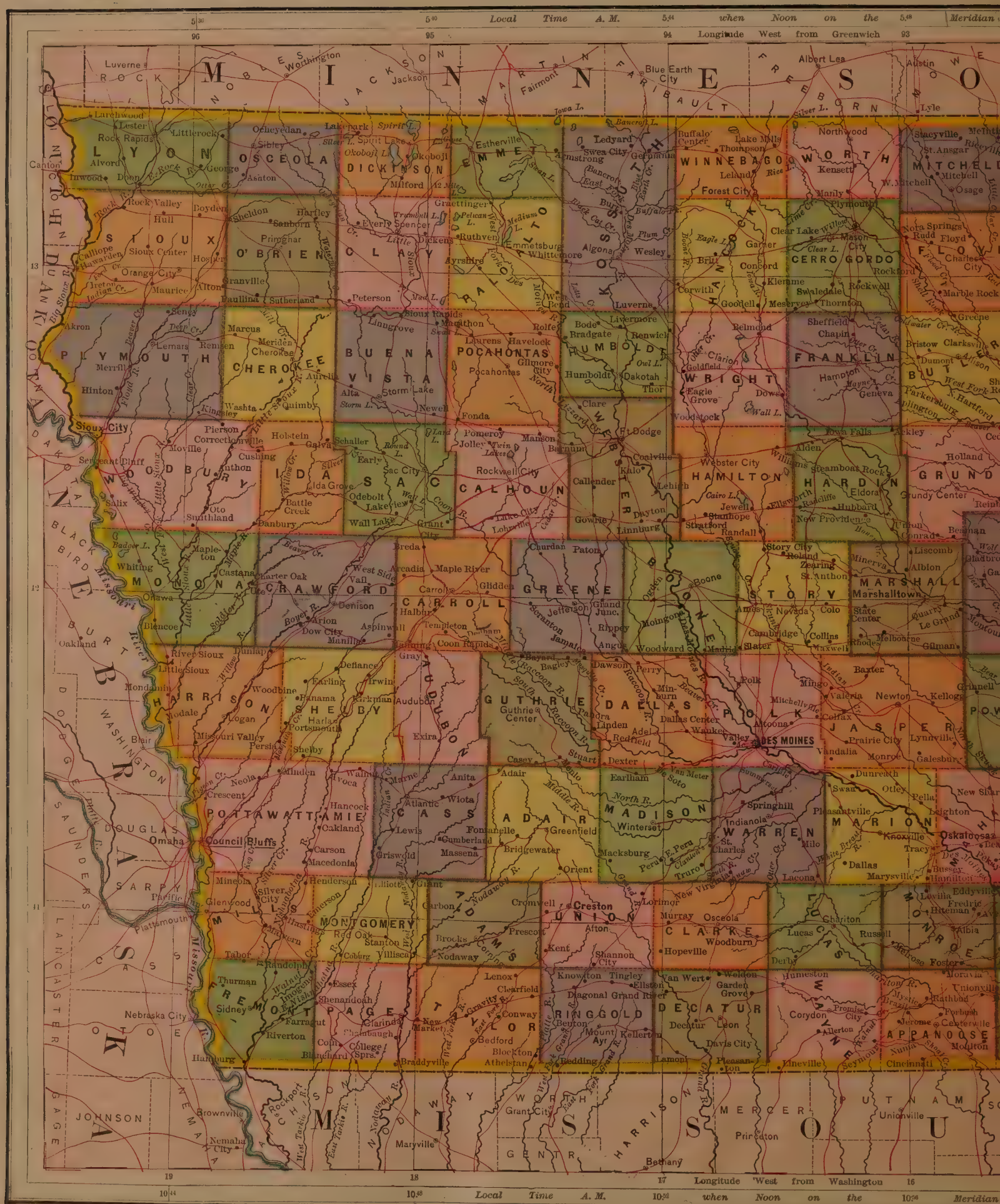
Des Moines River.



View on Cedar River.

reached in the northern part of the state. The rainfall is abundant, the annual average being about 32 inches. The climate is healthful, and comparatively few diseases can be traced to climatic influences.

The soil of the greater part of the state consists largely of a heavy, dark, drift loam of wonderful and seemingly inexhaustible fertility. In the west yellow siliceous deposits of great depth and richness occur; while in the river valleys the soil, of alluvial origin, is unsurpassed in productiveness. Perhaps in no other state is there so small a proportion of unproductive land. There are no mountains nor marshes nor sandy wastes; and it is estimated that nine tenths of the entire area is adapted to agriculture.





RESOURCES.

Minerals. The most important mineral deposit in Iowa is soft or bituminous coal, with which fully one fifth of the state is underlain. Coal is mined in at least 30 counties in the southern part of the state. Monroe, Polk, Appanoose, Mahaska, Jasper, Wapello, Boone, and Dallas are the leading counties in coal production. The veins are from a few inches to several feet in thickness. Three or four veins are often worked in the same mine, and between the layers of coal an excellent quality of clay is found.

Clay, suitable for brick and tile making, is found in nearly all parts of the state, and potter's clay is likewise abundant. Clay from which paving brick is made is also widely distributed.

The valuable deposits of lead ore in the vicinity of Dubuque attracted the earliest settlers to these parts. Lead has been mined in the vicinity of Dubuque for more than 100 years, but the output is now small. Zinc also is found in this locality.

Gypsum, from which stucco is made, is found in large quantities at Fort Dodge, in Webster county. The deposits of gypsum are very valuable, and the works at this place are among the most noted of the kind in the United States.

Limestone of excellent quality is found in nearly all parts of the state, in the bluffs along the streams. It is widely used for building purposes, and good lime is obtained by burning it in limekilns. It is also used in the manufacture of Portland cement.

Boulders or hardheads are found on many of the prairies of Iowa. Until recently these stones were regarded as of little value, but they are now used to good advantage in laying foundations for buildings. Other mineral products include sand, gravel, slate, shale, ocher, natural gas, and mineral waters.

Vegetation. The native timber of Iowa is found mainly along the banks of its rivers and smaller streams. The principal forest trees are the ash, elm, maple, hickory, butternut, poplar, cottonwood, box elder, black walnut, and several varieties of oak. The red cedar is common in many localities. Several varieties of cherry, crab apple, and plum are abundant.

In nearly all parts of the state artificial groves of willow, maple, Lombardy poplar, cottonwood, and less frequently of pine, larch, and spruce, are seen. To encourage the people to set out groves, a reduction in taxes is made to the owner of the land for a term of years after the trees are planted.

Native grasses grow in abundance. Large crops of timothy, clover, and blue grass are raised on land that has been subdued by cultivation. There are several hundred varieties of wild flowers. Wild roses, lilies, asters, honeysuckles, and the famous golden-rod are very common.

Animals. Coyotes or prairie wolves are still found in sparsely settled sections. The wild cat, raccoon, woodchuck, mink, otter, muskrat, gopher, gray squirrel, rabbit, and jack rabbit are the principal wild animals now found in the state. Game birds are few in kind as well as in number. Prairie chickens, once numerous, have been nearly exterminated. Quails and partridges are also dis-



An Iowa Landscape — Picking Berries.

appearing. Ducks, geese, and brant are found in lakes and ponds, in large numbers at certain seasons of the year. During the nesting season there are nearly 200 species of birds in the state. The rivers and lakes of Iowa are well stocked with fish. Pickerel, bass, and perch are the most common kinds. Some of the smaller streams and ponds have been stocked with trout in recent years.

The United States government has recently established a fish hatchery on Spring Branch, near Manchester, Iowa. Suitable buildings have been erected, and the grounds prepared at a cost of nearly thirty thousand dollars. Two large springs, spouting 2200 gallons of water a minute, furnish the necessary water supply. Several hundred thousand fish,—spring and mountain trout, rock and black bass, and carp,—are bred here annually. There is also a hatchery at Spirit Lake.

INDUSTRIES.

Agriculture. Nature seems to have decreed that Iowa should become a great agricultural state. It has a deep, fertile soil, a temperate climate, abundant rainfall, good drainage, and its generally level surface is well adapted to the use of farm machinery for sowing, planting, cultivating, and harvesting crops. Large crops of corn, hay, oats, wheat, potatoes, and barley are raised. Wheat was once the principal grain raised in the state, but diversified farming has forced it to fourth place in the list of important crops. Rye, flaxseed, sweet potatoes, and buckwheat are among the minor crops. In some parts of Iowa fair crops are still raised on land that has been continuously cultivated for more than 40 years without the use of fertilizers.

Corn is the leading staple, and nearly one fourth of the entire area of the state is devoted to the raising of this crop. Millions of bushels are used to fatten the vast number of cattle and hogs annually reared, and many millions of bushels are exported.

Stock-raising is one of the leading occupations of Iowa, which in this branch of industry holds a foremost rank

among the states of the Union. Much attention is given to the raising of draft and driving horses. Thousands of horses are annually exported. Sheep are raised and poultry products yield ample returns.

In the products of the dairy, also, Iowa is in the front rank. Creameries and cheese factories are numerous, and the butter and cheese produced are of excellent quality. Many people find employment in driving from house to house and gathering cream for the creameries. In many parts of the state milk is taken to the creameries twice a day. Here the butter fat is at once separated from the milk by a machine called a separator. The milk is then taken back to the farm for feeding purposes. Small separators for single dairies are now employed, and by the use of these the expense of hauling the milk to the factory is saved.



Sugar Refinery, Clinton.

In the vicinity of all the important cities and towns many people devote their attention to raising vegetables and small fruits. Southern Iowa has become famous for the large quantities of apples, grapes, and cherries produced.

Manufactures. The manufactures of Iowa are somewhat limited on account of the attention given to agriculture, but manufacturing is increasing rapidly and all the larger cities encourage its advancement. Meat-packing is the most important industry, although Iowa has long been noted for its creamery products, ranking third among the states in this regard. Other important manufactures are machinery, flour, lumber, cars, carriages, agricultural implements, brick and tile, and buttons.

Commerce. The commerce of Iowa is restricted to the export of her surplus farm and manufactured products, and the importation of articles of necessity, comfort, or luxury for her people. The state is more than 1000 miles from the ocean, but tea, coffee, spices, and other imported articles are often brought directly here by way of the Mississippi River.

The railroads of Iowa have an aggregate length of about 10,000 miles. Six trunk lines cross the state from east to west, and these, with their feeders and a few smaller lines, cover it so completely that no place within its borders is more than 12 miles from a railway station.

HISTORY.

Iowa was discovered by the French in 1673. In 1803 the United States bought from France a vast territory, known as the Louisiana Purchase, in which Iowa was included.

From 1804 to 1838 Iowa was part of Indiana, Missouri, Michigan, and Wisconsin territories successively.

During the discussion of the bill for the admission of Iowa it was urged in Congress that the western half of the proposed state was a

part of the "Great American Desert," and that it would never be settled. It was at first proposed to fix a meridian just west of Des Moines for the western boundary, and to have the state extend much farther north than it now does. Had that plan prevailed, St. Paul and Minneapolis would doubtless now be in Iowa.

The first settlement was made at Dubuque, in 1788, by Julien Dubuque and ten associates, who came to dig lead ore. For many years after the settlement by Dubuque all this territory was held by the Indians, and their power was not completely broken until the defeat of Black Hawk, in the summer of 1832. Indian names abound in the state in connection with counties, rivers, and towns. The names of 20 counties are of Indian origin, and hundreds of local names were derived from the same source.

The permanent settlement did not begin until the close of the Black Hawk war, in 1832. The pioneers of Iowa came from the states directly east, and from New England. They were a sturdy, industrious people, well fitted to lay the foundations of a great commonwealth.

In 1838 Iowa was organized as a territory, and on December 28, 1846, it was admitted to the Union as a state.

Land Survey. The land of Iowa is surveyed according to the rectangular system of land surveys adopted by the United States government in the early days of its history. By this plan the entire area is divided into ranges, townships, sections, and fractional parts of a section, and by means of a uniform system of numbering, any piece of land is easily located. Much of the land of Iowa was early sold to settlers at the government price of \$1.25 an acre.

The survey of Iowa is made from the fifth principal meridian, which extends due north from the mouth of the Arkansas River, crossing the eastern part of Missouri and



Thrashing Wheat, Central Iowa.

Iowa. The base line runs due west from the mouth of the St. Francis River, in Arkansas. Congressional townships are numbered in tiers north from this line, and in ranges east and west from the principal meridian. Each township in the southern tier of townships in Iowa is known as Township 67, and each in the northern tier as Township 100. They are distinguished from one another by the number of the range, east or west.

People. The census of 1910 showed that Iowa had then a population of 2,224,-

771. About five sixths of the entire population are natives of the United States. The principal foreign nationalities represented are the German, Scandinavian, English, Irish, and Bohemian.

There are large settlements of Germans in all parts of the state, and Scandinavian settlements are also widely distributed. The principal Irish settlements are in Clinton, Dubuque, Polk, and Scott counties. The Hollanders have large settlements in Sioux and Marion counties. The Welsh are located principally in Howard, Iowa, Jasper, Mahaska, and Monroe counties, and the Canadians in Woodbury county. At Amana, in Iowa county, is an interesting communistic organization of Germans, known as the Amana Society. The society owns six townships of well-improved land, and holds all property in common.

It is said that a few of the Sac and Fox Indians refused to join Black Hawk in the war against the whites in 1832, and were called Musquakies or "deserters." In 1855 they settled in Tama county, where the remnant still reside. They now number about 400, and own some 2000 acres of land, held in trust for them by the governor of Iowa and a representative of the Federal government.

Government. The present constitution was adopted by the people in 1857. It has been amended several times, but no radical changes have been made in it.

The right to vote at all elections is extended only to male citizens of the United States, 21 years of age, who have resided in the state six months, and in the county



Haying Scene, Western Iowa.



Stockyards, Sioux City.

in which they claim their vote sixty days next preceding the election. Idiots, insane persons, and persons convicted of infamous crimes are denied the right of suffrage.

The legislative power is vested in a general assembly, consisting of a senate, whose members are elected for 4 years, and a house of representatives, the members of which are elected for 2 years. The legislative sessions are biennial.

The principal executive officers are a governor, lieutenant-governor, secretary of state, auditor of state, treasurer of state, attorney-general, and superintendent of public instruction.

The judicial department consists of a supreme court, district courts, and superior courts. Cities with a population of 7000 or more may establish superior courts. Police and justice courts are also maintained.

Iowa has four classes of districts — congressional, senatorial, representative, and judicial. There are 11 congressional districts, and each elects a member of the House of Representatives in Congress. The state is divided into 50 senatorial districts, and one state senator is chosen from each district. At present there are 99 representative districts. Each of 9 of these districts chooses two representatives to the state legislature, and the remaining 90 districts one representative each.

There are 20 judicial districts. Each district has one or more judges of the district court, elected by the qualified voters of the district in which they serve.

Iowa contains 99 counties, and each county has an organized government of its own. The county officers consist of a board of supervisors, auditor, clerk of courts, treasurer, recorder, county attorney, sheriff, superintendent of schools, surveyor, and coroner.

Municipal government in Iowa is organized in cities and incorporated towns. Cities of the first class are those which have a population of 15,000 or more. Cities of the second class are those having a population between 2000 and 15,000. Incorporated towns have a population of less than 2000. Several cities were organized in the early history of the state, under special charters, which they still retain.

The government of cities and incorporated towns is administered by a mayor and a council composed of aldermen. Several other officers are authorized by law.

There are three kinds of townships — congressional, civil, and school townships. The congressional township is the basis of land surveys. These townships are of uniform shape and area, and are each divided into 36 square miles, or sections. The civil township is for the purpose of local government, and the school township is for the control of school affairs.

The civil township always has some local name. Its officers are three trustees, a clerk, two justices of the peace, two constables, and several road supervisors.

The school township is separated into subdistricts, and a director is chosen annually in each subdistrict. These directors together compose the township board of directors. This board has control of all school affairs of the township.

Years ago many district townships were divided into what are known as rural independent districts. They are generally about two miles square, and have only one school each. In such districts the board of directors consists of three members, one chosen each year for a term of three years. Villages, incorporated towns, and cities of the second class have boards of directors consisting of five members in each district. In cities of the first class the board of directors consists of seven members. In all independent school districts one third of the board, as nearly as possible, are chosen each year on the second Monday in March.

Education. Iowa is very liberal in supporting educational institutions. To maintain the system of public schools the state annually expends nearly \$12,000,000, exclusive of the state institutions. The permanent school fund, derived principally from the sale of public lands, amounts to about \$5,000,000. Under care of the state, county, and city superintendents, and the local boards of directors, the public schools have attained a high rank among similar institutions in our country. Women may hold any school office in the state.

The state institutions for higher education are the State University at Iowa City, the State College of Agriculture and Mechanic Arts at Ames, and the State Normal School at Cedar Falls.

The list of benevolent and reformatory institutions maintained by the state, and providing special education, includes the College for the Blind at Vinton, the Industrial School for Boys at Eldora, the Industrial



Packing House, Sioux City.

School for Girls at Mitchellville, the Institution for Feeble-minded Children at Glenwood, the Iowa School for the Deaf at Council Bluffs, and the Soldiers' Orphans' Home at Davenport.

The Iowa Soldiers' Home is located at Marshalltown. There are state hospitals for the insane at Mount Pleasant, Independence, Clarinda, and Cherokee. The state penitentiaries are at Fort Madison and Anamosa.

In addition to the educational institutions supported by the state, there are many denominational and private colleges and academies. They are doing excellent work for higher education. There are normal schools and business colleges which enroll large numbers of students.



Railroad Shops, Cedar Rapids.

Grinnell College at Grinnell, Cornell College at Mount Vernon, Drake University at Des Moines, Iowa Wesleyan University at Mount Pleasant, Penn College at Oskaloosa, Upper Iowa University at Fayette, Coe College at Cedar Rapids, Leander Clark College at Toledo, Simpson College at Indianola, Morningside College at Sioux City, Parsons College at Fairfield, Lenox College at Hopkinton, Tabor College at Tabor, Des Moines College at Des Moines, and Central University at Pella, are important institutions.

CITIES.

Des Moines (population, 1910, 86,368) is the capital of the state, and the county seat of Polk county. The state-house, erected at a cost of nearly \$3,000,000, is one of the finest structures of the kind in the Union. The city stands at the junction of the Des Moines and Raccoon rivers. Most of the principal railways of the state enter Des Moines, which makes it an important railroad center.

The capital of Iowa is centrally located. It is in the heart of the coal region, and in one of the best agricultural portions of the state. Coal is mined within the city limits. It manufactures proprietary medicines, flour, machinery, furniture, brick, tile, and various other articles.

Drake University, Callanan College, Des Moines College, Highland Park Normal College, and the Capital City Commercial College, are excellent institutions. The public schools are of high rank.

Sioux City (47,824), the county seat of Woodbury county, at the confluence of the Missouri and Big Sioux rivers, is the largest city in the northwestern part of the state. Several railway lines center here, and its location makes the city a distributing point for the products of that section. Packing houses and various manufactories furnish employment to many people. Sioux City has an excellent system of public schools.

Davenport (43,028), the county seat of Scott county, is an important city on the Mississippi, opposite to the cities of Rock Island and Moline, Illinois. Foundries and machine shops, packing houses, and tobacco factories are located here, and there is an extensive trade with the surrounding rich agricultural region and with the east and west. Davenport has excellent public and private schools.

Dubuque (38,494), the county seat of Dubuque county, is finely situated on the Mississippi River. Among its manufactures are lumber, clothing, carriages and wagons, malt liquors, packed meat, and machinery; and it also has important mining and commercial interests, and a large

wholesale trade. Its educational facilities are excellent.

Cedar Rapids (32,811), a beautiful interior city of Iowa, is situated on the Cedar River, in Linn county. The packing houses of this city are important establishments. Among the manufactures are oatmeal, flour, carriages, and machinery. The educational facilities are excellent.

Council Bluffs (29,292), the county seat of Pottawattamie county, is an important city on the Missouri River, opposite Omaha, Nebraska, with which it is connected by several fine railroad bridges. It has varied manufactures, and large commercial interests.

Waterloo (26,693), the county seat of Blackhawk county, is on both banks of the Cedar River. It has good water power, excellent railroad facilities, a large trade, and many important industries.

Clinton (25,577), the county seat of Clinton county, on the Mississippi River. Refined sugar, woven wire, wagons, locks, machinery, paper, and bridges are among its numerous manufactures. The river is spanned here by several fine bridges.

Burlington (24,324), the county seat of Des Moines county, is a fine city on the banks of the Mississippi River. It is noted for its commerce, railroad facilities, and the manufacture of agricultural implements, carriages, furniture, and iron and brass work.

Ottumwa, the county seat of Wapello county, is situated on the Des Moines River, which here affords abundant water power, and in the midst of the Des Moines valley coal fields. It is an important railroad and commercial center. The manufactures are varied and extensive.

Muscatine, the county seat of Muscatine county, is on the Mississippi and is well situated for commerce. It is an important shipping point for lumber and garden products. Here are extensive lumber mills.

Fort Dodge, the county seat of Webster county, on Des Moines River, is a grain market, and a city of varied industries. There are quarries of building stone, and gypsum and coal mines in the vicinity.

Keokuk, a thriving city of Lee county, is on the Mississippi River. It is an important railroad center, and also has an extensive river traffic, the Mississippi being navigable to this point, for the largest steamboats. The city has a large general trade, and various manufactures.

Marshalltown, the county seat of Marshall county, has an elevated site in the valley of the Iowa River. Here are grain elevators and packing houses, car shops, glucose works, and various other manufactories.

Mason City, the county seat of Cerro Gordo county, is a railroad center, and is situated in an agricultural and stock-raising region. It has stone quarries, and brick and tile, cement, and other manufactures.



State Capitol, Des Moines.



A Street in Des Moines.

Boone, the county seat of Boone county, is a railroad center in the coal fields, and is surrounded by a rich farming country. It has coal mines, railroad repair shops, brick and tile works, and flour mills.

Iowa City, the county seat of Johnson county, is pleasantly situated on the Iowa River. Here is located the State University, which, with other institutions, makes this an educational center. Iowa City manufactures jewelry and agricultural implements, and it has extensive quarries.

Oskaloosa, the county seat of Mahaska county, is a railroad center situated in a large coal-mining district. Its manufactures include iron work, clothing, cigars, washing machines, and brick and tile.

Fort Madison, the county seat of Lee county, is located on the Mississippi River. It has railway repair shops, foundries, and packing houses, and manufactures lumber, agricultural implements, chairs, and paper.

Centerville, the county seat of Appanoose county, is near coal beds at the junction of several railroads. It manufactures machinery, flour, and brick and tile.

Creston, the county seat of Union county, is an important center of trade. It has various manufactures and a large trade in grain and live stock. Extensive railroad shops are located here.

Oelwein is a railroad junction point in Fayette county, and has railroad shops, and important agricultural, stock-raising, and dairying interests.

Charles City, the county seat of Floyd county, is on the Cedar River. It manufactures furniture, lumber, engines, and agricultural implements.

Webster City, the county seat of Hamilton county, is an agricultural and coal-mining region. Its chief manufactures are boots and shoes, farm implements, brick and tile, and flour.

Grinnell, in Poweshiek county, is the seat of Iowa College. Agriculture and stock-raising are the chief industries.

Cedar Falls, in Blackhawk county, is situated on the Cedar River. It has a fine water power, which is utilized in various manufactories.

Shenandoah, in Page county, has extensive nurseries and seed farms. Machinery, vehicles, canned goods, flour, and brick and tile are among its manufactures.

Fairfield, the county seat of Jefferson county, is finely located in a region of great fertility. Agricultural implements, wagons, and brick and tile are among its various manufactures. The educational facilities are excellent.



A Street in Cedar Rapids.

Albia, the county seat of Monroe county, is in a fertile farming and stock-raising district, and it also has extensive coal mines.

Cherokee, the county seat of Cherokee county, is on the Little Sioux River in a rich farming district.

Red Oak, the county seat of Montgomery county, is the business center of an agricultural and stock-raising region. Pottery, flour, brick and tile, and machinery are among its manufactures.

Perry, in Dallas county, has important agricultural interests. Machinery and condensed milk are among its manufactures.

Newton, the county seat of Jasper county, manufactures incubators and farming implements, and trades largely in grain and live stock.

Atlantic, the county seat of Cass county, is situated on the East Nishnabotna River, and is the center of a fine agricultural section. It has a large business in canning and pork-packing.

Marion, the county seat of Linn county, has numerous manufactures which include flour, furniture, carriages, and agricultural implements.

Washington, the county seat of Washington county, has important agricultural interests. It is an important horse market, and manufactures brick and tile, and carriages.

Ames, an agricultural center in Story county, is the seat of the Iowa State College of Agriculture and Mechanic Arts.

Le Mars, the county seat of Plymouth county, is a trade center in an important grain and stock-raising region. It has various manufactures.

Glenwood, the county seat of Mills county, has a large trade in apples and other farm produce. The Iowa Institution for Feeble Minded Children is located here.

Among the many other cities in Iowa, all of which have important and varied interests, may be mentioned: *Mount Pleasant*, in Henry county; *Clarinda*, in Page county; *Chariton*, in Lucas county; *Decorah*, in Winne-shiek county; *Maquoketa*, in Jackson county; *Carroll*, in Carroll county; *Independence*, in Buchanan county; *Estherville*, in Emmet county; *Eagle Grove*, in Wright county; *Vinton* and *Belle Plaine*, in Benton county; *Indianola*, in Warren county; *Waverly*, in Bremer county; *Knorrville* and *Pella*, in Marion county; *Missouri Valley*, in Harrison county; *Denison*, in Crawford county; *Spencer*, in Clay county; and *Anamosa*, in Jones county.



View of Dubuque, looking toward the Mississippi.

POPULATION OF THE COUNTIES OF IOWA, 1910.

Adair	14,420	Clay	12,766	Hancock	12,731	Madison	15,621	Sac	16,555
Adams	10,998	Clayton	25,576	Hardin	20,921	Mahaska	29,860	Scott	60,000
Allamakee	17,328	Clinton	45,894	Harrison	23,162	Marion	22,995	Shelby	16,552
Appanoose	28,701	Crawford	20,041	Henry	18,640	Marshall	30,279	Sioux	25,248
Audubon	12,671	Dallas	23,628	Howard	12,920	Mills	15,811	Story	24,083
Benton	23,156	Davis	13,315	Humboldt	12,182	Mitchell	13,435	Tama	22,156
Blackhawk	44,865	Decatur	16,347	Ida	11,296	Monona	16,633	Taylor	16,312
Boone	27,626	Delaware	17,888	Iowa	18,409	Monroe	25,429	Union	16,616
Bremer	15,843	Des Moines	36,145	Jackson	21,258	Montgomery	16,604	Van Buren	15,020
Buchanan	19,748	Dickinson	8,137	Jasper	27,034	Muscatine	29,505	Wapello	37,743
Buena Vista	15,981	Dubuque	57,450	Jefferson	15,951	O'Brien	17,262	Warren	18,194
Butler	17,119	Emmet	9,816	Johnson	25,914	Osceola	8,956	Washington	19,925
Calhoun	17,090	Fayette	27,919	Jones	19,050	Page	21,002	Wayne	16,184
Carroll	20,117	Floyd	17,119	Keokuk	21,160	Palo Alto	13,845	Webster	34,629
Cass	19,047	Franklin	14,780	Kossuth	21,971	Plymouth	23,129	Winnebago	11,914
Cedar	17,765	Fremont	15,623	Lee	36,702	Pocahontas	14,808	Winnesheik	21,729
Cerro Gordo	25,011	Greene	16,023	Linn	60,720	Polk	110,438	Woodbury	67,616
Cherokee	16,741	Grundy	13,574	Louisa	12,855	Pottawattamie	55,832	Worth	9,950
Chickasaw	15,375	Guthrie	17,374	Lucas	13,162	Poweshiek	19,589	Wright	17,951
Clarke	10,736	Hamilton	19,242	Lyon	14,624	Ringgold	12,904	The State	2,224,771

POPULATION OF THE PRINCIPAL CITIES AND TOWNS IN IOWA, 1910.

Ackley	1,244	Coon Rapids	1,084	Hampton	2,617	Missouri Valley	3,187	Sanborn	1,174
Adel	1,289	Corning	1,702	Harlan	2,570	Montezuma	1,172	Seymour	2,290
Afton	1,014	Corydon	1,669	Hartley	1,106	Monticello	2,043	Sheldon	2,941
Akron	1,130	Council Bluffs	29,292	Hawarden	2,107	Moulton	1,233	Shenandoah	4,976
Albia	4,969	Cresco	2,658	Humboldt	1,809	Mount Ayr	1,646	Sibley	1,330
Algona	2,908	Creston	6,924	Humeston	1,006	Mount Pleasant	3,874	Sidney	1,019
Alton	1,046	Davenport	43,028	Ida Grove	1,874	Mount Vernon	1,532	Sigourney	2,032
Ames	4,223	Decorah	3,592	Independence	3,517	Muscatine	16,178	Sioux Center	1,064
Anamosa	2,983	Denison	3,133	Indianola	3,283	Mystic	2,663	Sioux City	47,828
Anita	1,118	Des Moines	86,368	Iowa City	10,091	Nashua	1,102	Spencer	3,005
Atlantic	4,560	Dewitt	1,634	Iowa Falls	2,797	Nevada	2,138	Spirit Lake	1,162
Audubon	1,928	Dubuque	38,494	Jefferson	2,477	New Hampton	2,275	Storm Lake	2,428
Avoca	1,520	Dunlap	1,155	Keokuk	14,008	New London	1,144	Story City	1,387
Bedford	1,883	Dyersville	1,511	Keosauqua	1,009	New Sharon	1,122	Strawberry Point	1,052
Belle Plaine	3,121	Eagle Grove	3,387	Keota	988	Newton	4,616	Stuart	1,826
Bellevue	1,776	Eddyville	1,085	Knoxville	3,190	Northwood	1,264	Sumner	1,404
Belmond	1,224	Eldon	2,024	La Porte City	1,233	Oakland	1,105	Tama	2,290
Bloomfield	2,028	Eldora	1,995	Lake City	2,043	Odebolt	1,283	Tipton	2,048
Boone	10,347	Elkader	1,181	Lake Mills	1,214	Oelwein	6,028	Toledo	1,626
Britt	1,303	Emmetsburg	2,325	Lamoni	1,541	Ogden	1,298	Traer	1,373
Brooklyn	1,233	Estherville	3,404	Lansing	1,542	Onawa	2,026	Valley Junction	2,573
Burlington	24,324	Fairfield	4,970	Le Mars	4,157	Orange City	1,374	Villisca	2,039
Carroll	3,546	Farmington	1,165	Lenox	1,274	Osage	2,445	Vinton	3,336
Cascade	1,268	Fayette	1,112	Leon	1,991	Osceola	2,416	Wapello	1,326
Cedar Falls	5,012	Forest City	1,691	Logan	1,453	Oskaloosa	9,466	Washington	4,380
Cedar Rapids	32,811	Fort Dodge	15,543	McGregor	1,259	Ottumwa	22,012	Waterloo	26,693
Centerville	6,936	Fort Madison	8,900	Madrid	1,191	Panora	1,080	Waukon	2,025
Chariton	3,794	Garner	1,028	Malvern	1,154	Pella	3,021	Waverly	3,205
Charles City	5,892	Glenwood	4,052	Manchester	2,758	Perry	4,630	Webster City	5,208
Cherokee	4,884	Grand Junction	1,012	Manning	1,434	Pocahontas	987	West Burlington	1,206
Cincinnati	1,355	Green	1,150	Manson	1,236	Red Oak	4,830	West Liberty	1,666
Clarinda	3,832	Greenfield	1,379	Mapleton	1,100	Reinbeck	1,205	West Union	1,652
Clarion	2,065	Grinnell	5,036	Maquoketa	3,570	Remsen	1,076	What Cheer	1,720
Clear Lake	2,014	Grundy Center	1,354	Marengo	1,786	Rock Rapids	2,005	Williamsburg	1,060
Clinton	25,577	Guthrie Center	1,337	Marion	4,400	Rock Valley	1,198	Wilton	1,157
Colfax	2,524	Guttenberg	1,873	Marshalltown	13,374	Rockwell City	1,528	Winterset	2,818
Columbus Junction	1,185	Hamburg	1,817	Mason City	11,230	Sac City	2,201	Woodbine	1,538





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